

## SŁOŃCE

| Data<br>2025 | 0 <sup>h</sup> UT |                   |                   | Data<br>2025 | 0 <sup>h</sup> UT |                   |                   |          |          |          |
|--------------|-------------------|-------------------|-------------------|--------------|-------------------|-------------------|-------------------|----------|----------|----------|
|              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |          |          |          |
| I            | 1                 | 0.17868           | -0.88721          | -0.38460     | II                | 16                | 0.83049           | -0.49086 | -0.21279 |          |
|              | 2                 | 0.19586           | -0.88414          | -0.38327     |                   | 17                | 0.83996           | -0.47746 | -0.20698 |          |
|              | 3                 | 0.21297           | -0.88080          | -0.38182     |                   | 18                | 0.84917           | -0.46392 | -0.20111 |          |
|              | 4                 | 0.23002           | -0.87718          | -0.38025     |                   | 19                | 0.85813           | -0.45023 | -0.19518 |          |
|              | 5                 | 0.24699           | -0.87328          | -0.37856     |                   | 20                | 0.86682           | -0.43641 | -0.18918 |          |
|              | 6                 | 0.26389           | -0.86912          | -0.37675     |                   | 21                | 0.87525           | -0.42244 | -0.18313 |          |
|              | 7                 | 0.28070           | -0.86468          | -0.37483     |                   | 22                | 0.88341           | -0.40835 | -0.17702 |          |
|              | 8                 | 0.29742           | -0.85998          | -0.37279     |                   | 23                | 0.89130           | -0.39413 | -0.17086 |          |
|              | 9                 | 0.31405           | -0.85500          | -0.37063     |                   | 24                | 0.89892           | -0.37980 | -0.16464 |          |
|              | 10                | 0.33057           | -0.84977          | -0.36836     |                   | 25                | 0.90627           | -0.36534 | -0.15838 |          |
|              | 11                | 0.34700           | -0.84427          | -0.36598     |                   | 26                | 0.91333           | -0.35077 | -0.15206 |          |
|              | 12                | 0.36331           | -0.83851          | -0.36348     |                   | 27                | 0.92012           | -0.33609 | -0.14570 |          |
|              | 13                | 0.37952           | -0.83249          | -0.36087     |                   | 28                | 0.92663           | -0.32131 | -0.13929 |          |
|              | 14                | 0.39560           | -0.82621          | -0.35815     |                   | III               | 1                 | 0.93285  | -0.30643 | -0.13284 |
|              | 15                | 0.41157           | -0.81968          | -0.35532     |                   |                   | 2                 | 0.93879  | -0.29146 | -0.12635 |
|              | 16                | 0.42740           | -0.81289          | -0.35238     |                   |                   | 3                 | 0.94444  | -0.27640 | -0.11982 |
|              | 17                | 0.44311           | -0.80585          | -0.34933     |                   |                   | 4                 | 0.94980  | -0.26125 | -0.11325 |
|              | 18                | 0.45867           | -0.79856          | -0.34617     |                   |                   | 5                 | 0.95487  | -0.24603 | -0.10665 |
|              | 19                | 0.47410           | -0.79103          | -0.34290     |                   |                   | 6                 | 0.95965  | -0.23073 | -0.10002 |
|              | 20                | 0.48938           | -0.78324          | -0.33953     |                   |                   | 7                 | 0.96414  | -0.21537 | -0.09336 |
|              | 21                | 0.50451           | -0.77522          | -0.33605     |                   |                   | 8                 | 0.96833  | -0.19994 | -0.08667 |
|              | 22                | 0.51949           | -0.76695          | -0.33247     |                   |                   | 9                 | 0.97224  | -0.18445 | -0.07996 |
|              | 23                | 0.53430           | -0.75845          | -0.32878     |                   |                   | 10                | 0.97585  | -0.16891 | -0.07322 |
|              | 24                | 0.54895           | -0.74971          | -0.32499     |                   |                   | 11                | 0.97916  | -0.15332 | -0.06647 |
|              | 25                | 0.56343           | -0.74073          | -0.32110     |                   | 12                | 0.98219           | -0.13768 | -0.05969 |          |
|              | 26                | 0.57774           | -0.73152          | -0.31711     |                   | 13                | 0.98491           | -0.12200 | -0.05289 |          |
|              | 27                | 0.59187           | -0.72209          | -0.31302     |                   | 14                | 0.98734           | -0.10629 | -0.04608 |          |
|              | 28                | 0.60581           | -0.71243          | -0.30883     |                   | 15                | 0.98948           | -0.09054 | -0.03926 |          |
|              | 29                | 0.61957           | -0.70255          | -0.30455     | 16                | 0.99132           | -0.07477          | -0.03242 |          |          |
|              | 30                | 0.63313           | -0.69245          | -0.30017     | 17                | 0.99286           | -0.05898          | -0.02557 |          |          |
|              | 31                | 0.64650           | -0.68213          | -0.29570     | 18                | 0.99410           | -0.04316          | -0.01872 |          |          |
| II           | 1                 | 0.65966           | -0.67160          | -0.29113     | 19                | 0.99505           | -0.02733          | -0.01186 |          |          |
|              | 2                 | 0.67262           | -0.66087          | -0.28648     | 20                | 0.99570           | -0.01150          | -0.00499 |          |          |
|              | 3                 | 0.68537           | -0.64993          | -0.28174     | 21                | 0.99606           | 0.00435           | 0.00187  |          |          |
|              | 4                 | 0.69791           | -0.63879          | -0.27691     | 22                | 0.99611           | 0.02019           | 0.00874  |          |          |
|              | 5                 | 0.71023           | -0.62745          | -0.27199     | 23                | 0.99587           | 0.03602           | 0.01561  |          |          |
|              | 6                 | 0.72232           | -0.61592          | -0.26699     | 24                | 0.99533           | 0.05185           | 0.02247  |          |          |
|              | 7                 | 0.73420           | -0.60420          | -0.26191     | 25                | 0.99449           | 0.06767           | 0.02932  |          |          |
|              | 8                 | 0.74585           | -0.59230          | -0.25675     | 26                | 0.99335           | 0.08346           | 0.03617  |          |          |
|              | 9                 | 0.75726           | -0.58021          | -0.25151     | 27                | 0.99192           | 0.09923           | 0.04301  |          |          |
|              | 10                | 0.76845           | -0.56795          | -0.24620     | 28                | 0.99019           | 0.11497           | 0.04983  |          |          |
|              | 11                | 0.77939           | -0.55551          | -0.24081     | 29                | 0.98816           | 0.13068           | 0.05664  |          |          |
|              | 12                | 0.79010           | -0.54291          | -0.23534     | 30                | 0.98584           | 0.14635           | 0.06343  |          |          |
|              | 13                | 0.80057           | -0.53014          | -0.22981     | 31                | 0.98322           | 0.16198           | 0.07021  |          |          |
|              | 14                | 0.81079           | -0.51720          | -0.22420     | IV                | 1                 | 0.98031           | 0.17755  | 0.07696  |          |
|              | 15                | 0.82076           | -0.50411          | -0.21853     |                   | 2                 | 0.97710           | 0.19307  | 0.08369  |          |

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|--------------|-------------------|-------------------|-------------------|--------------|-------------------|-------------------|-------------------|---------|---------|
|              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |         |         |
| IV           | 3                 | 0.97361           | 0.20854           | 0.09039      | V                 | 19                | 0.53714           | 0.78652 | 0.34094 |
|              | 4                 | 0.96983           | 0.22394           | 0.09707      |                   | 20                | 0.52277           | 0.79485 | 0.34455 |
|              | 5                 | 0.96576           | 0.23927           | 0.10372      |                   | 21                | 0.50825           | 0.80296 | 0.34806 |
|              | 6                 | 0.96140           | 0.25453           | 0.11033      |                   | 22                | 0.49358           | 0.81083 | 0.35148 |
|              | 7                 | 0.95677           | 0.26972           | 0.11691      |                   | 23                | 0.47877           | 0.81848 | 0.35480 |
|              | 8                 | 0.95185           | 0.28482           | 0.12346      |                   | 24                | 0.46382           | 0.82589 | 0.35801 |
|              | 9                 | 0.94665           | 0.29984           | 0.12997      |                   | 25                | 0.44873           | 0.83307 | 0.36112 |
|              | 10                | 0.94117           | 0.31477           | 0.13644      |                   | 26                | 0.43352           | 0.84001 | 0.36413 |
|              | 11                | 0.93542           | 0.32960           | 0.14287      |                   | 27                | 0.41818           | 0.84671 | 0.36703 |
|              | 12                | 0.92939           | 0.34434           | 0.14926      |                   | 28                | 0.40272           | 0.85316 | 0.36983 |
|              | 13                | 0.92310           | 0.35898           | 0.15561      |                   | 29                | 0.38715           | 0.85937 | 0.37252 |
|              | 14                | 0.91653           | 0.37352           | 0.16191      |                   | 30                | 0.37147           | 0.86534 | 0.37511 |
|              | 15                | 0.90970           | 0.38794           | 0.16816      |                   | 31                | 0.35568           | 0.87106 | 0.37759 |
|              | 16                | 0.90260           | 0.40225           | 0.17436      | VI                | 1                 | 0.33979           | 0.87653 | 0.37996 |
|              | 17                | 0.89523           | 0.41645           | 0.18051      |                   | 2                 | 0.32381           | 0.88175 | 0.38222 |
|              | 18                | 0.88761           | 0.43052           | 0.18662      |                   | 3                 | 0.30774           | 0.88672 | 0.38438 |
|              | 19                | 0.87972           | 0.44447           | 0.19266      |                   | 4                 | 0.29158           | 0.89143 | 0.38642 |
|              | 20                | 0.87158           | 0.45830           | 0.19866      |                   | 5                 | 0.27534           | 0.89590 | 0.38835 |
|              | 21                | 0.86319           | 0.47199           | 0.20459      |                   | 6                 | 0.25902           | 0.90011 | 0.39018 |
|              | 22                | 0.85454           | 0.48554           | 0.21047      |                   | 7                 | 0.24263           | 0.90406 | 0.39189 |
|              | 23                | 0.84564           | 0.49895           | 0.21628      |                   | 8                 | 0.22618           | 0.90777 | 0.39350 |
|              | 24                | 0.83649           | 0.51222           | 0.22203      |                   | 9                 | 0.20966           | 0.91121 | 0.39499 |
|              | 25                | 0.82710           | 0.52534           | 0.22772      |                   | 10                | 0.19308           | 0.91440 | 0.39637 |
|              | 26                | 0.81747           | 0.53831           | 0.23334      |                   | 11                | 0.17645           | 0.91733 | 0.39764 |
|              | 27                | 0.80759           | 0.55112           | 0.23890      |                   | 12                | 0.15977           | 0.92000 | 0.39880 |
|              | 28                | 0.79748           | 0.56377           | 0.24438      |                   | 13                | 0.14304           | 0.92241 | 0.39985 |
|              | 29                | 0.78714           | 0.57625           | 0.24979      |                   | 14                | 0.12628           | 0.92457 | 0.40078 |
|              | 30                | 0.77657           | 0.58857           | 0.25513      |                   | 15                | 0.10947           | 0.92646 | 0.40160 |
| V            | 1                 | 0.76577           | 0.60071           | 0.26040      |                   | 16                | 0.09264           | 0.92809 | 0.40231 |
|              | 2                 | 0.75475           | 0.61268           | 0.26559      |                   | 17                | 0.07577           | 0.92947 | 0.40291 |
|              | 3                 | 0.74352           | 0.62448           | 0.27070      |                   | 18                | 0.05889           | 0.93058 | 0.40339 |
|              | 4                 | 0.73207           | 0.63608           | 0.27573      |                   | 19                | 0.04199           | 0.93143 | 0.40376 |
|              | 5                 | 0.72041           | 0.64751           | 0.28068      |                   | 20                | 0.02507           | 0.93201 | 0.40401 |
|              | 6                 | 0.70854           | 0.65875           | 0.28555      |                   | 21                | 0.00814           | 0.93234 | 0.40415 |
|              | 7                 | 0.69647           | 0.66979           | 0.29034      |                   | 22                | -0.00879          | 0.93239 | 0.40418 |
|              | 8                 | 0.68420           | 0.68064           | 0.29504      |                   | 23                | -0.02572          | 0.93219 | 0.40409 |
|              | 9                 | 0.67173           | 0.69130           | 0.29966      |                   | 24                | -0.04264          | 0.93172 | 0.40389 |
|              | 10                | 0.65908           | 0.70176           | 0.30420      |                   | 25                | -0.05955          | 0.93099 | 0.40357 |
|              | 11                | 0.64623           | 0.71202           | 0.30864      |                   | 26                | -0.07644          | 0.92999 | 0.40314 |
|              | 12                | 0.63320           | 0.72207           | 0.31300      |                   | 27                | -0.09332          | 0.92873 | 0.40259 |
|              | 13                | 0.61999           | 0.73192           | 0.31727      |                   | 28                | -0.11016          | 0.92720 | 0.40193 |
|              | 14                | 0.60660           | 0.74155           | 0.32144      |                   | 29                | -0.12697          | 0.92542 | 0.40116 |
|              | 15                | 0.59304           | 0.75098           | 0.32553      |                   | 30                | -0.14375          | 0.92337 | 0.40027 |
|              | 16                | 0.57931           | 0.76019           | 0.32952      | VII               | 1                 | -0.16048          | 0.92106 | 0.39927 |
|              | 17                | 0.56542           | 0.76919           | 0.33342      |                   | 2                 | -0.17717          | 0.91850 | 0.39815 |
|              | 18                | 0.55136           | 0.77796           | 0.33723      |                   | 3                 | -0.19381          | 0.91567 | 0.39693 |

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|--------------|-------------------|-------------------|-------------------|--------------|-------------------|-------------------|-------------------|----------|----------|----------|---------|
|              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |          |          |          |         |
| VII          | 4                 | -0.21039          | 0.91258           | 0.39559      | VIII              | 19                | -0.83837          | 0.52019  | 0.22550  |          |         |
|              | 5                 | -0.22691          | 0.90924           | 0.39414      |                   | 20                | -0.84762          | 0.50710  | 0.21983  |          |         |
|              | 6                 | -0.24336          | 0.90565           | 0.39258      |                   | 21                | -0.85662          | 0.49387  | 0.21409  |          |         |
|              | 7                 | -0.25975          | 0.90180           | 0.39091      |                   | 22                | -0.86538          | 0.48049  | 0.20829  |          |         |
|              | 8                 | -0.27606          | 0.89770           | 0.38913      |                   | 23                | -0.87389          | 0.46697  | 0.20243  |          |         |
|              | 9                 | -0.29229          | 0.89334           | 0.38725      |                   | 24                | -0.88215          | 0.45331  | 0.19651  |          |         |
|              | 10                | -0.30844          | 0.88874           | 0.38525      |                   | 25                | -0.89015          | 0.43953  | 0.19053  |          |         |
|              | 11                | -0.32450          | 0.88388           | 0.38315      |                   | 26                | -0.89790          | 0.42562  | 0.18450  |          |         |
|              | 12                | -0.34048          | 0.87878           | 0.38094      |                   | 27                | -0.90538          | 0.41159  | 0.17842  |          |         |
|              | 13                | -0.35635          | 0.87343           | 0.37862      |                   | 28                | -0.91261          | 0.39744  | 0.17229  |          |         |
|              | 14                | -0.37213          | 0.86784           | 0.37620      |                   | 29                | -0.91957          | 0.38318  | 0.16610  |          |         |
|              | 15                | -0.38781          | 0.86201           | 0.37367      |                   | 30                | -0.92627          | 0.36881  | 0.15987  |          |         |
|              | 16                | -0.40337          | 0.85593           | 0.37103      |                   | 31                | -0.93270          | 0.35433  | 0.15360  |          |         |
|              | 17                | -0.41883          | 0.84961           | 0.36829      |                   | IX                | 1                 | -0.93887 | 0.33975  | 0.14728  |         |
|              | 18                | -0.43417          | 0.84305           | 0.36545      |                   |                   | 2                 | -0.94476 | 0.32508  | 0.14092  |         |
|              | 19                | -0.44939          | 0.83625           | 0.36250      |                   |                   | 3                 | -0.95038 | 0.31032  | 0.13452  |         |
|              | 20                | -0.46448          | 0.82921           | 0.35946      |                   |                   | 4                 | -0.95572 | 0.29546  | 0.12808  |         |
|              | 21                | -0.47944          | 0.82194           | 0.35630      |                   |                   | 5                 | -0.96079 | 0.28052  | 0.12161  |         |
|              | 22                | -0.49427          | 0.81444           | 0.35305      |                   |                   | 6                 | -0.96559 | 0.26551  | 0.11510  |         |
|              | 23                | -0.50896          | 0.80671           | 0.34970      |                   |                   | 7                 | -0.97010 | 0.25041  | 0.10855  |         |
|              | 24                | -0.52351          | 0.79874           | 0.34625      |                   |                   | 8                 | -0.97434 | 0.23525  | 0.10198  |         |
|              | 25                | -0.53790          | 0.79055           | 0.34270      |                   |                   | 9                 | -0.97830 | 0.22001  | 0.09538  |         |
|              | 26                | -0.55215          | 0.78214           | 0.33905      |                   |                   | 10                | -0.98198 | 0.20472  | 0.08875  |         |
|              | 27                | -0.56623          | 0.77350           | 0.33530      |                   |                   | 11                | -0.98537 | 0.18936  | 0.08209  |         |
|              | 28                | -0.58016          | 0.76464           | 0.33146      |                   |                   | 12                | -0.98848 | 0.17395  | 0.07541  |         |
|              | 29                | -0.59392          | 0.75557           | 0.32753      |                   |                   | 13                | -0.99130 | 0.15849  | 0.06871  |         |
|              | 30                | -0.60751          | 0.74628           | 0.32350      |                   |                   | 14                | -0.99384 | 0.14297  | 0.06199  |         |
|              | 31                | -0.62093          | 0.73679           | 0.31939      |                   |                   | 15                | -0.99609 | 0.12742  | 0.05524  |         |
|              | VIII              | 1                 | -0.63417          | 0.72708      |                   |                   | 0.31518           | 16       | -0.99805 | 0.11183  | 0.04848 |
|              |                   | 2                 | -0.64723          | 0.71717      |                   |                   | 0.31088           | 17       | -0.99971 | 0.09620  | 0.04171 |
|              |                   | 3                 | -0.66010          | 0.70706      |                   |                   | 0.30650           | 18       | -1.00109 | 0.08054  | 0.03492 |
| 4            |                   | -0.67279          | 0.69675           | 0.30203      | 19                |                   | -1.00217          | 0.06486  | 0.02812  |          |         |
| 5            |                   | -0.68529          | 0.68624           | 0.29747      | 20                |                   | -1.00296          | 0.04916  | 0.02132  |          |         |
| 6            |                   | -0.69759          | 0.67554           | 0.29283      | 21                |                   | -1.00345          | 0.03345  | 0.01450  |          |         |
| 7            |                   | -0.70969          | 0.66465           | 0.28811      | 22                |                   | -1.00365          | 0.01772  | 0.00769  |          |         |
| 8            |                   | -0.72159          | 0.65357           | 0.28331      | 23                |                   | -1.00356          | 0.00199  | 0.00087  |          |         |
| 9            |                   | -0.73329          | 0.64230           | 0.27843      | 24                |                   | -1.00317          | -0.01374 | -0.00595 |          |         |
| 10           |                   | -0.74479          | 0.63086           | 0.27347      | 25                |                   | -1.00248          | -0.02947 | -0.01277 |          |         |
| 11           |                   | -0.75607          | 0.61924           | 0.26843      | 26                |                   | -1.00150          | -0.04518 | -0.01958 |          |         |
| 12           |                   | -0.76714          | 0.60744           | 0.26332      | 27                |                   | -1.00022          | -0.06089 | -0.02639 |          |         |
| 13           |                   | -0.77799          | 0.59547           | 0.25813      | 28                |                   | -0.99865          | -0.07657 | -0.03319 |          |         |
| 14           |                   | -0.78862          | 0.58333           | 0.25287      | 29                |                   | -0.99679          | -0.09223 | -0.03998 |          |         |
| 15           |                   | -0.79903          | 0.57102           | 0.24754      | 30                |                   | -0.99463          | -0.10786 | -0.04675 |          |         |
| 16           |                   | -0.80921          | 0.55855           | 0.24213      | X                 |                   | 1                 | -0.99218 | -0.12346 | -0.05352 |         |
| 17           |                   | -0.81917          | 0.54592           | 0.23666      |                   | 2                 | -0.98944          | -0.13902 | -0.06026 |          |         |
| 18           |                   | -0.82889          | 0.53314           | 0.23111      |                   | 3                 | -0.98640          | -0.15454 | -0.06699 |          |         |

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|--------------|-------------------|-------------------|-------------------|--------------|-------------------|-------------------|-------------------|----------|----------|
|              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |              | X <sub>2000</sub> | Y <sub>2000</sub> | Z <sub>2000</sub> |          |          |
| X            | 4                 | -0.98308          | -0.17001          | -0.07369     | XI                | 19                | -0.54488          | -0.75663 | -0.32799 |
|              | 5                 | -0.97946          | -0.18543          | -0.08038     |                   | 20                | -0.53016          | -0.76516 | -0.33168 |
|              | 6                 | -0.97556          | -0.20080          | -0.08704     |                   | 21                | -0.51527          | -0.77346 | -0.33528 |
|              | 7                 | -0.97137          | -0.21610          | -0.09367     |                   | 22                | -0.50023          | -0.78151 | -0.33877 |
|              | 8                 | -0.96690          | -0.23135          | -0.10028     |                   | 23                | -0.48503          | -0.78933 | -0.34216 |
|              | 9                 | -0.96214          | -0.24652          | -0.10686     |                   | 24                | -0.46969          | -0.79690 | -0.34544 |
|              | 10                | -0.95710          | -0.26162          | -0.11340     |                   | 25                | -0.45420          | -0.80422 | -0.34862 |
|              | 11                | -0.95177          | -0.27665          | -0.11991     |                   | 26                | -0.43857          | -0.81130 | -0.35168 |
|              | 12                | -0.94616          | -0.29159          | -0.12639     |                   | 27                | -0.42280          | -0.81812 | -0.35464 |
|              | 13                | -0.94027          | -0.30645          | -0.13283     |                   | 28                | -0.40691          | -0.82470 | -0.35749 |
|              | 14                | -0.93410          | -0.32122          | -0.13924     |                   | 29                | -0.39089          | -0.83101 | -0.36023 |
|              | 15                | -0.92765          | -0.33590          | -0.14560     |                   | 30                | -0.37476          | -0.83707 | -0.36285 |
|              | 16                | -0.92092          | -0.35048          | -0.15192     | XII               | 1                 | -0.35851          | -0.84288 | -0.36537 |
|              | 17                | -0.91391          | -0.36495          | -0.15819     |                   | 2                 | -0.34215          | -0.84842 | -0.36777 |
|              | 18                | -0.90664          | -0.37931          | -0.16442     |                   | 3                 | -0.32569          | -0.85370 | -0.37006 |
|              | 19                | -0.89908          | -0.39357          | -0.17060     |                   | 4                 | -0.30913          | -0.85872 | -0.37224 |
|              | 20                | -0.89126          | -0.40770          | -0.17673     |                   | 5                 | -0.29247          | -0.86348 | -0.37430 |
|              | 21                | -0.88317          | -0.42171          | -0.18280     |                   | 6                 | -0.27573          | -0.86797 | -0.37624 |
|              | 22                | -0.87481          | -0.43559          | -0.18882     |                   | 7                 | -0.25890          | -0.87219 | -0.37808 |
|              | 23                | -0.86619          | -0.44935          | -0.19478     |                   | 8                 | -0.24198          | -0.87615 | -0.37979 |
|              | 24                | -0.85731          | -0.46297          | -0.20069     |                   | 9                 | -0.22500          | -0.87983 | -0.38139 |
|              | 25                | -0.84817          | -0.47644          | -0.20653     |                   | 10                | -0.20794          | -0.88324 | -0.38287 |
|              | 26                | -0.83878          | -0.48977          | -0.21231     |                   | 11                | -0.19082          | -0.88639 | -0.38423 |
|              | 27                | -0.82913          | -0.50296          | -0.21802     |                   | 12                | -0.17363          | -0.88925 | -0.38547 |
|              | 28                | -0.81923          | -0.51599          | -0.22367     |                   | 13                | -0.15639          | -0.89184 | -0.38660 |
|              | 29                | -0.80908          | -0.52886          | -0.22925     |                   | 14                | -0.13910          | -0.89416 | -0.38760 |
|              | 30                | -0.79869          | -0.54158          | -0.23476     |                   | 15                | -0.12177          | -0.89620 | -0.38849 |
|              | 31                | -0.78807          | -0.55412          | -0.24020     |                   | 16                | -0.10439          | -0.89796 | -0.38925 |
| XI           | 1                 | -0.77720          | -0.56650          | -0.24557     |                   | 17                | -0.08699          | -0.89944 | -0.38989 |
|              | 2                 | -0.76610          | -0.57871          | -0.25086     |                   | 18                | -0.06955          | -0.90063 | -0.39041 |
|              | 3                 | -0.75477          | -0.59074          | -0.25607     |                   | 19                | -0.05209          | -0.90155 | -0.39081 |
|              | 4                 | -0.74321          | -0.60260          | -0.26121     |                   | 20                | -0.03462          | -0.90219 | -0.39109 |
|              | 5                 | -0.73143          | -0.61427          | -0.26627     |                   | 21                | -0.01714          | -0.90255 | -0.39124 |
|              | 6                 | -0.71943          | -0.62575          | -0.27125     |                   | 22                | 0.00035           | -0.90262 | -0.39127 |
|              | 7                 | -0.70722          | -0.63705          | -0.27614     |                   | 23                | 0.01784           | -0.90241 | -0.39118 |
|              | 8                 | -0.69478          | -0.64816          | -0.28096     |                   | 24                | 0.03532           | -0.90192 | -0.39097 |
|              | 9                 | -0.68214          | -0.65906          | -0.28569     |                   | 25                | 0.05280           | -0.90115 | -0.39063 |
|              | 10                | -0.66929          | -0.66977          | -0.29033     |                   | 26                | 0.07025           | -0.90010 | -0.39018 |
|              | 11                | -0.65623          | -0.68028          | -0.29488     |                   | 27                | 0.08768           | -0.89877 | -0.38960 |
|              | 12                | -0.64298          | -0.69058          | -0.29935     |                   | 28                | 0.10508           | -0.89715 | -0.38890 |
|              | 13                | -0.62952          | -0.70068          | -0.30373     |                   | 29                | 0.12244           | -0.89526 | -0.38808 |
|              | 14                | -0.61588          | -0.71055          | -0.30801     |                   | 30                | 0.13977           | -0.89309 | -0.38714 |
|              | 15                | -0.60204          | -0.72022          | -0.31220     |                   | 31                | 0.15705           | -0.89065 | -0.38608 |
|              | 16                | -0.58802          | -0.72966          | -0.31629     |                   |                   |                   |          |          |
|              | 17                | -0.57381          | -0.73888          | -0.32029     |                   |                   |                   |          |          |
|              | 18                | -0.55943          | -0.74787          | -0.32419     |                   |                   |                   |          |          |