

# 수학 상수 표

| 기호             | 상세                  | 값 (소수점 아래 20자리까지)         |
|----------------|---------------------|---------------------------|
| $\pi$          | 원주율                 | 3.14159 26535 89793 23846 |
| $\tau$         | 새 원주율               | 6.28318 53071 79586 47692 |
| $\sqrt{2}$     | 2의 제곱근              | 1.41421 35623 73095 04880 |
| $\sqrt{3}$     | 3의 제곱근              | 1.73205 08075 68877 29352 |
| $\sqrt{5}$     | 5의 제곱근              | 2.23606 79774 99789 69640 |
| $\phi$         | 황금비                 | 1.61803 39887 49894 84820 |
| $\sqrt[3]{2}$  | 2의 세제곱근             | 1.25992 10498 94873 16576 |
| $\sqrt[3]{3}$  | 3의 세제곱근             | 1.44224 95703 07408 38232 |
| $\sqrt[12]{2}$ | 2의 12제곱근            | 1.05946 30943 59295 26456 |
| $e$            | 자연로그의 밑             | 2.71828 18284 59045 23536 |
| $\ln 2$        | 2의 자연로그             | 0.69314 71805 59945 30941 |
| $\gamma$       | Euler-Mascheroni 상수 | 0.57721 56649 01532 86060 |
| $\Omega$       | 오메가 상수              | 0.56714 32904 09783 87299 |
| $\delta$       | 제1 Feigenbaum 상수    | 4.66920 16091 02990 67185 |
| $\alpha$       | 제2 Feigenbaum 상수    | 2.50290 78750 95892 82228 |
| $\beta$        | Bernstein 상수        | 0.28016 94990 23869 13303 |
| $\zeta(3)$     | Apéry 상수            | 1.20205 69031 59594 28539 |
| $\rho$         | 소수 상수               | 0.41468 25098 51111 66024 |

# Imperial 단위 변환 표

$$\text{inch} = 2.5400000 \times 10^{-2}\text{m}$$

$$\text{foot} = 3.0480000 \times 10^{-1}\text{m}$$

$$\text{yard} = 9.1440000 \times 10^{-1}\text{m}$$

$$\text{mile} = 1.6093440 \times 10^{+3}\text{m}$$

$$\text{fl oz} = 2.8413063 \times 10^{-2}\text{m}^3$$

$$\text{oz} = 2.8349523 \times 10^{-2}\text{kg}$$

$$\text{lb} = 4.5359237 \times 10^{-1}\text{kg}$$

# SI 접두사

$$\text{tera (T)} = 10^{12}$$

$$\text{giga (G)} = 10^9$$

$$\text{mega (M)} = 10^6$$

$$\text{kilo (k)} = 10^3$$

$$\text{hecto (h)} = 10^2$$

$$\text{deka (da)} = 10^1$$

$$\text{deci (d)} = 10^{-1}$$

$$\text{centi (c)} = 10^{-2}$$

$$\text{milli (m)} = 10^{-3}$$

$$\text{micro } (\mu) = 10^{-6}$$

$$\text{nano (n)} = 10^{-9}$$

$$\text{pico (p)} = 10^{-12}$$

# 상용로그 함수표

\*  $a_b$  는  $\frac{a}{10^{\lfloor \lg a \rfloor - 1}} \times 10^b$  를 의미한다.

| $x$ | 0                   | 1                   | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   |
|-----|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1.0 | 0                   | 43214 <sub>-3</sub> | 86002 <sub>-3</sub> | 12837 <sub>-2</sub> | 17033 <sub>-2</sub> | 21189 <sub>-2</sub> | 25306 <sub>-2</sub> | 29384 <sub>-2</sub> | 33424 <sub>-2</sub> | 37426 <sub>-2</sub> |
| 1.1 | 41393 <sub>-2</sub> | 45323 <sub>-2</sub> | 49218 <sub>-2</sub> | 53078 <sub>-2</sub> | 56905 <sub>-2</sub> | 60698 <sub>-2</sub> | 64458 <sub>-2</sub> | 68186 <sub>-2</sub> | 71882 <sub>-2</sub> | 75547 <sub>-2</sub> |
| 1.2 | 79181 <sub>-2</sub> | 82785 <sub>-2</sub> | 86360 <sub>-2</sub> | 89905 <sub>-2</sub> | 93422 <sub>-2</sub> | 96910 <sub>-2</sub> | 10037 <sub>-1</sub> | 10380 <sub>-1</sub> | 10721 <sub>-1</sub> | 11059 <sub>-1</sub> |
| 1.3 | 11394 <sub>-1</sub> | 11727 <sub>-1</sub> | 12057 <sub>-1</sub> | 12385 <sub>-1</sub> | 12710 <sub>-1</sub> | 13033 <sub>-1</sub> | 13354 <sub>-1</sub> | 13672 <sub>-1</sub> | 13988 <sub>-1</sub> | 14301 <sub>-1</sub> |
| 1.4 | 14613 <sub>-1</sub> | 14922 <sub>-1</sub> | 15229 <sub>-1</sub> | 15534 <sub>-1</sub> | 15836 <sub>-1</sub> | 16137 <sub>-1</sub> | 16435 <sub>-1</sub> | 16732 <sub>-1</sub> | 17026 <sub>-1</sub> | 17319 <sub>-1</sub> |
| 1.5 | 17609 <sub>-1</sub> | 17898 <sub>-1</sub> | 18184 <sub>-1</sub> | 18469 <sub>-1</sub> | 18752 <sub>-1</sub> | 19033 <sub>-1</sub> | 19312 <sub>-1</sub> | 19590 <sub>-1</sub> | 19866 <sub>-1</sub> | 20140 <sub>-1</sub> |
| 1.6 | 20412 <sub>-1</sub> | 20683 <sub>-1</sub> | 20952 <sub>-1</sub> | 21219 <sub>-1</sub> | 21484 <sub>-1</sub> | 21748 <sub>-1</sub> | 22011 <sub>-1</sub> | 22272 <sub>-1</sub> | 22531 <sub>-1</sub> | 22789 <sub>-1</sub> |
| 1.7 | 23045 <sub>-1</sub> | 23300 <sub>-1</sub> | 23553 <sub>-1</sub> | 23805 <sub>-1</sub> | 24055 <sub>-1</sub> | 24304 <sub>-1</sub> | 24551 <sub>-1</sub> | 24797 <sub>-1</sub> | 25042 <sub>-1</sub> | 25285 <sub>-1</sub> |
| 1.8 | 25527 <sub>-1</sub> | 25768 <sub>-1</sub> | 26007 <sub>-1</sub> | 26245 <sub>-1</sub> | 26482 <sub>-1</sub> | 26717 <sub>-1</sub> | 26951 <sub>-1</sub> | 27184 <sub>-1</sub> | 27416 <sub>-1</sub> | 27646 <sub>-1</sub> |
| 1.9 | 27875 <sub>-1</sub> | 28103 <sub>-1</sub> | 28330 <sub>-1</sub> | 28556 <sub>-1</sub> | 28780 <sub>-1</sub> | 29003 <sub>-1</sub> | 29226 <sub>-1</sub> | 29447 <sub>-1</sub> | 29667 <sub>-1</sub> | 29885 <sub>-1</sub> |
| 2.0 | 30103 <sub>-1</sub> | 30320 <sub>-1</sub> | 30535 <sub>-1</sub> | 30750 <sub>-1</sub> | 30963 <sub>-1</sub> | 31175 <sub>-1</sub> | 31387 <sub>-1</sub> | 31597 <sub>-1</sub> | 31806 <sub>-1</sub> | 32015 <sub>-1</sub> |
| 2.1 | 32222 <sub>-1</sub> | 32428 <sub>-1</sub> | 32634 <sub>-1</sub> | 32838 <sub>-1</sub> | 33041 <sub>-1</sub> | 33244 <sub>-1</sub> | 33445 <sub>-1</sub> | 33646 <sub>-1</sub> | 33846 <sub>-1</sub> | 34044 <sub>-1</sub> |
| 2.2 | 34242 <sub>-1</sub> | 34439 <sub>-1</sub> | 34635 <sub>-1</sub> | 34830 <sub>-1</sub> | 35025 <sub>-1</sub> | 35218 <sub>-1</sub> | 35411 <sub>-1</sub> | 35603 <sub>-1</sub> | 35793 <sub>-1</sub> | 35984 <sub>-1</sub> |
| 2.3 | 36173 <sub>-1</sub> | 36361 <sub>-1</sub> | 36549 <sub>-1</sub> | 36736 <sub>-1</sub> | 36922 <sub>-1</sub> | 37107 <sub>-1</sub> | 37291 <sub>-1</sub> | 37475 <sub>-1</sub> | 37658 <sub>-1</sub> | 37840 <sub>-1</sub> |
| 2.4 | 38021 <sub>-1</sub> | 38202 <sub>-1</sub> | 38382 <sub>-1</sub> | 38561 <sub>-1</sub> | 38739 <sub>-1</sub> | 38917 <sub>-1</sub> | 39094 <sub>-1</sub> | 39270 <sub>-1</sub> | 39445 <sub>-1</sub> | 39620 <sub>-1</sub> |
| 2.5 | 39794 <sub>-1</sub> | 39967 <sub>-1</sub> | 40140 <sub>-1</sub> | 40312 <sub>-1</sub> | 40483 <sub>-1</sub> | 40654 <sub>-1</sub> | 40824 <sub>-1</sub> | 40993 <sub>-1</sub> | 41162 <sub>-1</sub> | 41330 <sub>-1</sub> |
| 2.6 | 41497 <sub>-1</sub> | 41664 <sub>-1</sub> | 41830 <sub>-1</sub> | 41996 <sub>-1</sub> | 42160 <sub>-1</sub> | 42325 <sub>-1</sub> | 42488 <sub>-1</sub> | 42651 <sub>-1</sub> | 42813 <sub>-1</sub> | 42975 <sub>-1</sub> |
| 2.7 | 43136 <sub>-1</sub> | 43297 <sub>-1</sub> | 43457 <sub>-1</sub> | 43616 <sub>-1</sub> | 43775 <sub>-1</sub> | 43933 <sub>-1</sub> | 44091 <sub>-1</sub> | 44248 <sub>-1</sub> | 44404 <sub>-1</sub> | 44560 <sub>-1</sub> |
| 2.8 | 44716 <sub>-1</sub> | 44871 <sub>-1</sub> | 45025 <sub>-1</sub> | 45179 <sub>-1</sub> | 45332 <sub>-1</sub> | 45484 <sub>-1</sub> | 45637 <sub>-1</sub> | 45788 <sub>-1</sub> | 45939 <sub>-1</sub> | 46090 <sub>-1</sub> |
| 2.9 | 46240 <sub>-1</sub> | 46389 <sub>-1</sub> | 46538 <sub>-1</sub> | 46687 <sub>-1</sub> | 46835 <sub>-1</sub> | 46982 <sub>-1</sub> | 47129 <sub>-1</sub> | 47276 <sub>-1</sub> | 47422 <sub>-1</sub> | 47567 <sub>-1</sub> |
| 3.0 | 47712 <sub>-1</sub> | 47857 <sub>-1</sub> | 48001 <sub>-1</sub> | 48144 <sub>-1</sub> | 48287 <sub>-1</sub> | 48430 <sub>-1</sub> | 48572 <sub>-1</sub> | 48714 <sub>-1</sub> | 48855 <sub>-1</sub> | 48996 <sub>-1</sub> |
| 3.1 | 49136 <sub>-1</sub> | 49276 <sub>-1</sub> | 49415 <sub>-1</sub> | 49554 <sub>-1</sub> | 49693 <sub>-1</sub> | 49831 <sub>-1</sub> | 49969 <sub>-1</sub> | 50106 <sub>-1</sub> | 50243 <sub>-1</sub> | 50379 <sub>-1</sub> |
| 3.2 | 50515 <sub>-1</sub> | 50651 <sub>-1</sub> | 50786 <sub>-1</sub> | 50920 <sub>-1</sub> | 51055 <sub>-1</sub> | 51188 <sub>-1</sub> | 51322 <sub>-1</sub> | 51455 <sub>-1</sub> | 51587 <sub>-1</sub> | 51720 <sub>-1</sub> |
| 3.3 | 51851 <sub>-1</sub> | 51983 <sub>-1</sub> | 52114 <sub>-1</sub> | 52244 <sub>-1</sub> | 52375 <sub>-1</sub> | 52504 <sub>-1</sub> | 52634 <sub>-1</sub> | 52763 <sub>-1</sub> | 52892 <sub>-1</sub> | 53020 <sub>-1</sub> |
| 3.4 | 53148 <sub>-1</sub> | 53275 <sub>-1</sub> | 53403 <sub>-1</sub> | 53529 <sub>-1</sub> | 53656 <sub>-1</sub> | 53782 <sub>-1</sub> | 53908 <sub>-1</sub> | 54033 <sub>-1</sub> | 54158 <sub>-1</sub> | 54283 <sub>-1</sub> |
| 3.5 | 54407 <sub>-1</sub> | 54531 <sub>-1</sub> | 54654 <sub>-1</sub> | 54777 <sub>-1</sub> | 54900 <sub>-1</sub> | 55023 <sub>-1</sub> | 55145 <sub>-1</sub> | 55267 <sub>-1</sub> | 55388 <sub>-1</sub> | 55509 <sub>-1</sub> |
| 3.6 | 55630 <sub>-1</sub> | 55751 <sub>-1</sub> | 55871 <sub>-1</sub> | 55991 <sub>-1</sub> | 56110 <sub>-1</sub> | 56229 <sub>-1</sub> | 56348 <sub>-1</sub> | 56467 <sub>-1</sub> | 56585 <sub>-1</sub> | 56703 <sub>-1</sub> |
| 3.7 | 56820 <sub>-1</sub> | 56937 <sub>-1</sub> | 57054 <sub>-1</sub> | 57171 <sub>-1</sub> | 57287 <sub>-1</sub> | 57403 <sub>-1</sub> | 57519 <sub>-1</sub> | 57634 <sub>-1</sub> | 57749 <sub>-1</sub> | 57864 <sub>-1</sub> |
| 3.8 | 57978 <sub>-1</sub> | 58092 <sub>-1</sub> | 58206 <sub>-1</sub> | 58320 <sub>-1</sub> | 58433 <sub>-1</sub> | 58546 <sub>-1</sub> | 58659 <sub>-1</sub> | 58771 <sub>-1</sub> | 58883 <sub>-1</sub> | 58995 <sub>-1</sub> |
| 3.9 | 59106 <sub>-1</sub> | 59218 <sub>-1</sub> | 59329 <sub>-1</sub> | 59439 <sub>-1</sub> | 59550 <sub>-1</sub> | 59660 <sub>-1</sub> | 59770 <sub>-1</sub> | 59879 <sub>-1</sub> | 59988 <sub>-1</sub> | 60097 <sub>-1</sub> |
| 4.0 | 60206 <sub>-1</sub> | 60314 <sub>-1</sub> | 60423 <sub>-1</sub> | 60531 <sub>-1</sub> | 60638 <sub>-1</sub> | 60746 <sub>-1</sub> | 60853 <sub>-1</sub> | 60959 <sub>-1</sub> | 61066 <sub>-1</sub> | 61172 <sub>-1</sub> |
| 4.1 | 61278 <sub>-1</sub> | 61384 <sub>-1</sub> | 61490 <sub>-1</sub> | 61595 <sub>-1</sub> | 61700 <sub>-1</sub> | 61805 <sub>-1</sub> | 61909 <sub>-1</sub> | 62014 <sub>-1</sub> | 62118 <sub>-1</sub> | 62221 <sub>-1</sub> |
| 4.2 | 62325 <sub>-1</sub> | 62428 <sub>-1</sub> | 62531 <sub>-1</sub> | 62634 <sub>-1</sub> | 62737 <sub>-1</sub> | 62839 <sub>-1</sub> | 62941 <sub>-1</sub> | 63043 <sub>-1</sub> | 63144 <sub>-1</sub> | 63246 <sub>-1</sub> |
| 4.3 | 63347 <sub>-1</sub> | 63448 <sub>-1</sub> | 63548 <sub>-1</sub> | 63649 <sub>-1</sub> | 63749 <sub>-1</sub> | 63849 <sub>-1</sub> | 63949 <sub>-1</sub> | 64048 <sub>-1</sub> | 64147 <sub>-1</sub> | 64246 <sub>-1</sub> |
| 4.4 | 64345 <sub>-1</sub> | 64444 <sub>-1</sub> | 64542 <sub>-1</sub> | 64640 <sub>-1</sub> | 64738 <sub>-1</sub> | 64836 <sub>-1</sub> | 64933 <sub>-1</sub> | 65031 <sub>-1</sub> | 65128 <sub>-1</sub> | 65225 <sub>-1</sub> |
| 4.5 | 65321 <sub>-1</sub> | 65418 <sub>-1</sub> | 65514 <sub>-1</sub> | 65610 <sub>-1</sub> | 65706 <sub>-1</sub> | 65801 <sub>-1</sub> | 65896 <sub>-1</sub> | 65992 <sub>-1</sub> | 66087 <sub>-1</sub> | 66181 <sub>-1</sub> |
| 4.6 | 66276 <sub>-1</sub> | 66370 <sub>-1</sub> | 66464 <sub>-1</sub> | 66558 <sub>-1</sub> | 66652 <sub>-1</sub> | 66745 <sub>-1</sub> | 66839 <sub>-1</sub> | 66932 <sub>-1</sub> | 67025 <sub>-1</sub> | 67117 <sub>-1</sub> |
| 4.7 | 67210 <sub>-1</sub> | 67302 <sub>-1</sub> | 67394 <sub>-1</sub> | 67486 <sub>-1</sub> | 67578 <sub>-1</sub> | 67669 <sub>-1</sub> | 67761 <sub>-1</sub> | 67852 <sub>-1</sub> | 67943 <sub>-1</sub> | 68034 <sub>-1</sub> |
| 4.8 | 68124 <sub>-1</sub> | 68215 <sub>-1</sub> | 68305 <sub>-1</sub> | 68395 <sub>-1</sub> | 68485 <sub>-1</sub> | 68574 <sub>-1</sub> | 68664 <sub>-1</sub> | 68753 <sub>-1</sub> | 68842 <sub>-1</sub> | 68931 <sub>-1</sub> |
| 4.9 | 69020 <sub>-1</sub> | 69108 <sub>-1</sub> | 69197 <sub>-1</sub> | 69285 <sub>-1</sub> | 69373 <sub>-1</sub> | 69461 <sub>-1</sub> | 69548 <sub>-1</sub> | 69636 <sub>-1</sub> | 69723 <sub>-1</sub> | 69810 <sub>-1</sub> |
| 5.0 | 69897 <sub>-1</sub> | 69984 <sub>-1</sub> | 70070 <sub>-1</sub> | 70157 <sub>-1</sub> | 70243 <sub>-1</sub> | 70329 <sub>-1</sub> | 70415 <sub>-1</sub> | 70501 <sub>-1</sub> | 70586 <sub>-1</sub> | 70672 <sub>-1</sub> |
| 5.1 | 70757 <sub>-1</sub> | 70842 <sub>-1</sub> | 70927 <sub>-1</sub> | 71012 <sub>-1</sub> | 71096 <sub>-1</sub> | 71181 <sub>-1</sub> | 71265 <sub>-1</sub> | 71349 <sub>-1</sub> | 71433 <sub>-1</sub> | 71517 <sub>-1</sub> |
| 5.2 | 71600 <sub>-1</sub> | 71684 <sub>-1</sub> | 71767 <sub>-1</sub> | 71850 <sub>-1</sub> | 71933 <sub>-1</sub> | 72016 <sub>-1</sub> | 72099 <sub>-1</sub> | 72181 <sub>-1</sub> | 72263 <sub>-1</sub> | 72346 <sub>-1</sub> |
| 5.3 | 72428 <sub>-1</sub> | 72509 <sub>-1</sub> | 72591 <sub>-1</sub> | 72673 <sub>-1</sub> | 72754 <sub>-1</sub> | 72835 <sub>-1</sub> | 72916 <sub>-1</sub> | 72997 <sub>-1</sub> | 73078 <sub>-1</sub> | 73159 <sub>-1</sub> |
| 5.4 | 73239 <sub>-1</sub> | 73320 <sub>-1</sub> | 73400 <sub>-1</sub> | 73480 <sub>-1</sub> | 73560 <sub>-1</sub> | 73640 <sub>-1</sub> | 73719 <sub>-1</sub> | 73799 <sub>-1</sub> | 73878 <sub>-1</sub> | 73957 <sub>-1</sub> |
| 5.5 | 74036 <sub>-1</sub> | 74115 <sub>-1</sub> | 74194 <sub>-1</sub> | 74273 <sub>-1</sub> | 74351 <sub>-1</sub> | 74429 <sub>-1</sub> | 74507 <sub>-1</sub> | 74586 <sub>-1</sub> | 74663 <sub>-1</sub> | 74741 <sub>-1</sub> |

|     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|-----|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 5.6 | 74819 <sub>-1</sub> | 74896 <sub>-1</sub> | 74974 <sub>-1</sub> | 75051 <sub>-1</sub> | 75128 <sub>-1</sub> | 75205 <sub>-1</sub> | 75282 <sub>-1</sub> | 75358 <sub>-1</sub> | 75435 <sub>-1</sub> | 75511 <sub>-1</sub> |
| 5.7 | 75587 <sub>-1</sub> | 75664 <sub>-1</sub> | 75740 <sub>-1</sub> | 75815 <sub>-1</sub> | 75891 <sub>-1</sub> | 75967 <sub>-1</sub> | 76042 <sub>-1</sub> | 76118 <sub>-1</sub> | 76193 <sub>-1</sub> | 76268 <sub>-1</sub> |
| 5.8 | 76343 <sub>-1</sub> | 76418 <sub>-1</sub> | 76492 <sub>-1</sub> | 76567 <sub>-1</sub> | 76641 <sub>-1</sub> | 76716 <sub>-1</sub> | 76790 <sub>-1</sub> | 76864 <sub>-1</sub> | 76938 <sub>-1</sub> | 77012 <sub>-1</sub> |
| 5.9 | 77085 <sub>-1</sub> | 77159 <sub>-1</sub> | 77232 <sub>-1</sub> | 77305 <sub>-1</sub> | 77379 <sub>-1</sub> | 77452 <sub>-1</sub> | 77525 <sub>-1</sub> | 77597 <sub>-1</sub> | 77670 <sub>-1</sub> | 77743 <sub>-1</sub> |
| 6.0 | 77815 <sub>-1</sub> | 77887 <sub>-1</sub> | 77960 <sub>-1</sub> | 78032 <sub>-1</sub> | 78104 <sub>-1</sub> | 78176 <sub>-1</sub> | 78247 <sub>-1</sub> | 78319 <sub>-1</sub> | 78390 <sub>-1</sub> | 78462 <sub>-1</sub> |
| 6.1 | 78533 <sub>-1</sub> | 78604 <sub>-1</sub> | 78675 <sub>-1</sub> | 78746 <sub>-1</sub> | 78817 <sub>-1</sub> | 78888 <sub>-1</sub> | 78958 <sub>-1</sub> | 79029 <sub>-1</sub> | 79099 <sub>-1</sub> | 79169 <sub>-1</sub> |
| 6.2 | 79239 <sub>-1</sub> | 79309 <sub>-1</sub> | 79379 <sub>-1</sub> | 79449 <sub>-1</sub> | 79518 <sub>-1</sub> | 79588 <sub>-1</sub> | 79657 <sub>-1</sub> | 79727 <sub>-1</sub> | 79796 <sub>-1</sub> | 79865 <sub>-1</sub> |
| 6.3 | 79934 <sub>-1</sub> | 80003 <sub>-1</sub> | 80072 <sub>-1</sub> | 80140 <sub>-1</sub> | 80209 <sub>-1</sub> | 80277 <sub>-1</sub> | 80346 <sub>-1</sub> | 80414 <sub>-1</sub> | 80482 <sub>-1</sub> | 80550 <sub>-1</sub> |
| 6.4 | 80618 <sub>-1</sub> | 80686 <sub>-1</sub> | 80754 <sub>-1</sub> | 80821 <sub>-1</sub> | 80889 <sub>-1</sub> | 80956 <sub>-1</sub> | 81023 <sub>-1</sub> | 81090 <sub>-1</sub> | 81158 <sub>-1</sub> | 81224 <sub>-1</sub> |
| 6.5 | 81291 <sub>-1</sub> | 81358 <sub>-1</sub> | 81425 <sub>-1</sub> | 81491 <sub>-1</sub> | 81558 <sub>-1</sub> | 81624 <sub>-1</sub> | 81690 <sub>-1</sub> | 81757 <sub>-1</sub> | 81823 <sub>-1</sub> | 81889 <sub>-1</sub> |
| 6.6 | 81954 <sub>-1</sub> | 82020 <sub>-1</sub> | 82086 <sub>-1</sub> | 82151 <sub>-1</sub> | 82217 <sub>-1</sub> | 82282 <sub>-1</sub> | 82347 <sub>-1</sub> | 82413 <sub>-1</sub> | 82478 <sub>-1</sub> | 82543 <sub>-1</sub> |
| 6.7 | 82607 <sub>-1</sub> | 82672 <sub>-1</sub> | 82737 <sub>-1</sub> | 82802 <sub>-1</sub> | 82866 <sub>-1</sub> | 82930 <sub>-1</sub> | 82995 <sub>-1</sub> | 83059 <sub>-1</sub> | 83123 <sub>-1</sub> | 83187 <sub>-1</sub> |
| 6.8 | 83251 <sub>-1</sub> | 83315 <sub>-1</sub> | 83378 <sub>-1</sub> | 83442 <sub>-1</sub> | 83506 <sub>-1</sub> | 83569 <sub>-1</sub> | 83632 <sub>-1</sub> | 83696 <sub>-1</sub> | 83759 <sub>-1</sub> | 83822 <sub>-1</sub> |
| 6.9 | 83885 <sub>-1</sub> | 83948 <sub>-1</sub> | 84011 <sub>-1</sub> | 84073 <sub>-1</sub> | 84136 <sub>-1</sub> | 84198 <sub>-1</sub> | 84261 <sub>-1</sub> | 84323 <sub>-1</sub> | 84386 <sub>-1</sub> | 84448 <sub>-1</sub> |
| 7.0 | 84510 <sub>-1</sub> | 84572 <sub>-1</sub> | 84634 <sub>-1</sub> | 84696 <sub>-1</sub> | 84757 <sub>-1</sub> | 84819 <sub>-1</sub> | 84880 <sub>-1</sub> | 84942 <sub>-1</sub> | 85003 <sub>-1</sub> | 85065 <sub>-1</sub> |
| 7.1 | 85126 <sub>-1</sub> | 85187 <sub>-1</sub> | 85248 <sub>-1</sub> | 85309 <sub>-1</sub> | 85370 <sub>-1</sub> | 85431 <sub>-1</sub> | 85491 <sub>-1</sub> | 85552 <sub>-1</sub> | 85612 <sub>-1</sub> | 85673 <sub>-1</sub> |
| 7.2 | 85733 <sub>-1</sub> | 85794 <sub>-1</sub> | 85854 <sub>-1</sub> | 85914 <sub>-1</sub> | 85974 <sub>-1</sub> | 86034 <sub>-1</sub> | 86094 <sub>-1</sub> | 86153 <sub>-1</sub> | 86213 <sub>-1</sub> | 86273 <sub>-1</sub> |
| 7.3 | 86332 <sub>-1</sub> | 86392 <sub>-1</sub> | 86451 <sub>-1</sub> | 86510 <sub>-1</sub> | 86570 <sub>-1</sub> | 86629 <sub>-1</sub> | 86688 <sub>-1</sub> | 86747 <sub>-1</sub> | 86806 <sub>-1</sub> | 86864 <sub>-1</sub> |
| 7.4 | 86923 <sub>-1</sub> | 86982 <sub>-1</sub> | 87040 <sub>-1</sub> | 87099 <sub>-1</sub> | 87157 <sub>-1</sub> | 87216 <sub>-1</sub> | 87274 <sub>-1</sub> | 87332 <sub>-1</sub> | 87390 <sub>-1</sub> | 87448 <sub>-1</sub> |
| 7.5 | 87506 <sub>-1</sub> | 87564 <sub>-1</sub> | 87622 <sub>-1</sub> | 87679 <sub>-1</sub> | 87737 <sub>-1</sub> | 87795 <sub>-1</sub> | 87852 <sub>-1</sub> | 87910 <sub>-1</sub> | 87967 <sub>-1</sub> | 88024 <sub>-1</sub> |
| 7.6 | 88081 <sub>-1</sub> | 88138 <sub>-1</sub> | 88195 <sub>-1</sub> | 88252 <sub>-1</sub> | 88309 <sub>-1</sub> | 88366 <sub>-1</sub> | 88423 <sub>-1</sub> | 88480 <sub>-1</sub> | 88536 <sub>-1</sub> | 88593 <sub>-1</sub> |
| 7.7 | 88649 <sub>-1</sub> | 88705 <sub>-1</sub> | 88762 <sub>-1</sub> | 88818 <sub>-1</sub> | 88874 <sub>-1</sub> | 88930 <sub>-1</sub> | 88986 <sub>-1</sub> | 89042 <sub>-1</sub> | 89098 <sub>-1</sub> | 89154 <sub>-1</sub> |
| 7.8 | 89209 <sub>-1</sub> | 89265 <sub>-1</sub> | 89321 <sub>-1</sub> | 89376 <sub>-1</sub> | 89432 <sub>-1</sub> | 89487 <sub>-1</sub> | 89542 <sub>-1</sub> | 89597 <sub>-1</sub> | 89653 <sub>-1</sub> | 89708 <sub>-1</sub> |
| 7.9 | 89763 <sub>-1</sub> | 89818 <sub>-1</sub> | 89873 <sub>-1</sub> | 89927 <sub>-1</sub> | 89982 <sub>-1</sub> | 90037 <sub>-1</sub> | 90091 <sub>-1</sub> | 90146 <sub>-1</sub> | 90200 <sub>-1</sub> | 90255 <sub>-1</sub> |
| 8.0 | 90309 <sub>-1</sub> | 90363 <sub>-1</sub> | 90417 <sub>-1</sub> | 90472 <sub>-1</sub> | 90526 <sub>-1</sub> | 90580 <sub>-1</sub> | 90634 <sub>-1</sub> | 90687 <sub>-1</sub> | 90741 <sub>-1</sub> | 90795 <sub>-1</sub> |
| 8.1 | 90849 <sub>-1</sub> | 90902 <sub>-1</sub> | 90956 <sub>-1</sub> | 91009 <sub>-1</sub> | 91062 <sub>-1</sub> | 91116 <sub>-1</sub> | 91169 <sub>-1</sub> | 91222 <sub>-1</sub> | 91275 <sub>-1</sub> | 91328 <sub>-1</sub> |
| 8.2 | 91381 <sub>-1</sub> | 91434 <sub>-1</sub> | 91487 <sub>-1</sub> | 91540 <sub>-1</sub> | 91593 <sub>-1</sub> | 91645 <sub>-1</sub> | 91698 <sub>-1</sub> | 91751 <sub>-1</sub> | 91803 <sub>-1</sub> | 91855 <sub>-1</sub> |
| 8.3 | 91908 <sub>-1</sub> | 91960 <sub>-1</sub> | 92012 <sub>-1</sub> | 92065 <sub>-1</sub> | 92117 <sub>-1</sub> | 92169 <sub>-1</sub> | 92221 <sub>-1</sub> | 92273 <sub>-1</sub> | 92324 <sub>-1</sub> | 92376 <sub>-1</sub> |
| 8.4 | 92428 <sub>-1</sub> | 92480 <sub>-1</sub> | 92531 <sub>-1</sub> | 92583 <sub>-1</sub> | 92634 <sub>-1</sub> | 92686 <sub>-1</sub> | 92737 <sub>-1</sub> | 92788 <sub>-1</sub> | 92840 <sub>-1</sub> | 92891 <sub>-1</sub> |
| 8.5 | 92942 <sub>-1</sub> | 92993 <sub>-1</sub> | 93044 <sub>-1</sub> | 93095 <sub>-1</sub> | 93146 <sub>-1</sub> | 93197 <sub>-1</sub> | 93247 <sub>-1</sub> | 93298 <sub>-1</sub> | 93349 <sub>-1</sub> | 93399 <sub>-1</sub> |
| 8.6 | 93450 <sub>-1</sub> | 93500 <sub>-1</sub> | 93551 <sub>-1</sub> | 93601 <sub>-1</sub> | 93651 <sub>-1</sub> | 93702 <sub>-1</sub> | 93752 <sub>-1</sub> | 93802 <sub>-1</sub> | 93852 <sub>-1</sub> | 93902 <sub>-1</sub> |
| 8.7 | 93952 <sub>-1</sub> | 94002 <sub>-1</sub> | 94052 <sub>-1</sub> | 94101 <sub>-1</sub> | 94151 <sub>-1</sub> | 94201 <sub>-1</sub> | 94250 <sub>-1</sub> | 94300 <sub>-1</sub> | 94349 <sub>-1</sub> | 94399 <sub>-1</sub> |
| 8.8 | 94448 <sub>-1</sub> | 94498 <sub>-1</sub> | 94547 <sub>-1</sub> | 94596 <sub>-1</sub> | 94645 <sub>-1</sub> | 94694 <sub>-1</sub> | 94743 <sub>-1</sub> | 94792 <sub>-1</sub> | 94841 <sub>-1</sub> | 94890 <sub>-1</sub> |
| 8.9 | 94939 <sub>-1</sub> | 94988 <sub>-1</sub> | 95036 <sub>-1</sub> | 95085 <sub>-1</sub> | 95134 <sub>-1</sub> | 95182 <sub>-1</sub> | 95231 <sub>-1</sub> | 95279 <sub>-1</sub> | 95328 <sub>-1</sub> | 95376 <sub>-1</sub> |
| 9.0 | 95424 <sub>-1</sub> | 95472 <sub>-1</sub> | 95521 <sub>-1</sub> | 95569 <sub>-1</sub> | 95617 <sub>-1</sub> | 95665 <sub>-1</sub> | 95713 <sub>-1</sub> | 95761 <sub>-1</sub> | 95809 <sub>-1</sub> | 95856 <sub>-1</sub> |
| 9.1 | 95904 <sub>-1</sub> | 95952 <sub>-1</sub> | 95999 <sub>-1</sub> | 96047 <sub>-1</sub> | 96095 <sub>-1</sub> | 96142 <sub>-1</sub> | 96190 <sub>-1</sub> | 96237 <sub>-1</sub> | 96284 <sub>-1</sub> | 96332 <sub>-1</sub> |
| 9.2 | 96379 <sub>-1</sub> | 96426 <sub>-1</sub> | 96473 <sub>-1</sub> | 96520 <sub>-1</sub> | 96567 <sub>-1</sub> | 96614 <sub>-1</sub> | 96661 <sub>-1</sub> | 96708 <sub>-1</sub> | 96755 <sub>-1</sub> | 96802 <sub>-1</sub> |
| 9.3 | 96848 <sub>-1</sub> | 96895 <sub>-1</sub> | 96942 <sub>-1</sub> | 96988 <sub>-1</sub> | 97035 <sub>-1</sub> | 97081 <sub>-1</sub> | 97128 <sub>-1</sub> | 97174 <sub>-1</sub> | 97220 <sub>-1</sub> | 97267 <sub>-1</sub> |
| 9.4 | 97313 <sub>-1</sub> | 97359 <sub>-1</sub> | 97405 <sub>-1</sub> | 97451 <sub>-1</sub> | 97497 <sub>-1</sub> | 97543 <sub>-1</sub> | 97589 <sub>-1</sub> | 97635 <sub>-1</sub> | 97681 <sub>-1</sub> | 97727 <sub>-1</sub> |
| 9.5 | 97772 <sub>-1</sub> | 97818 <sub>-1</sub> | 97864 <sub>-1</sub> | 97909 <sub>-1</sub> | 97955 <sub>-1</sub> | 98000 <sub>-1</sub> | 98046 <sub>-1</sub> | 98091 <sub>-1</sub> | 98137 <sub>-1</sub> | 98182 <sub>-1</sub> |
| 9.6 | 98227 <sub>-1</sub> | 98272 <sub>-1</sub> | 98318 <sub>-1</sub> | 98363 <sub>-1</sub> | 98408 <sub>-1</sub> | 98453 <sub>-1</sub> | 98498 <sub>-1</sub> | 98543 <sub>-1</sub> | 98588 <sub>-1</sub> | 98632 <sub>-1</sub> |
| 9.7 | 98677 <sub>-1</sub> | 98722 <sub>-1</sub> | 98767 <sub>-1</sub> | 98811 <sub>-1</sub> | 98856 <sub>-1</sub> | 98900 <sub>-1</sub> | 98945 <sub>-1</sub> | 98989 <sub>-1</sub> | 99034 <sub>-1</sub> | 99078 <sub>-1</sub> |
| 9.8 | 99123 <sub>-1</sub> | 99167 <sub>-1</sub> | 99211 <sub>-1</sub> | 99255 <sub>-1</sub> | 99300 <sub>-1</sub> | 99344 <sub>-1</sub> | 99388 <sub>-1</sub> | 99432 <sub>-1</sub> | 99476 <sub>-1</sub> | 99520 <sub>-1</sub> |
| 9.9 | 99564 <sub>-1</sub> | 99607 <sub>-1</sub> | 99651 <sub>-1</sub> | 99695 <sub>-1</sub> | 99739 <sub>-1</sub> | 99782 <sub>-1</sub> | 99826 <sub>-1</sub> | 99870 <sub>-1</sub> | 99913 <sub>-1</sub> | 99957 <sub>-1</sub> |

### 추가 함숫값

- $\lg e = 0.43429\ 44819\ 03251\ 82765$
- 해당 표에 적혀있지 않은 값의 함숫값을 계산할 때, 다음 수식을 이용하여 값을 보정하라:

$$\lg(x + \varepsilon) = \lg(x) + \frac{\lg(e)}{x} \varepsilon$$

- 해당 표를 사용하여 지수를 계산할 때, 표에 적혀있지 않은 수에 대해서 다음 수식을 이용하여 값을 보정하라:

$$10^{x+\varepsilon} = 10^x \times \left(1 + \frac{\varepsilon}{\lg e}\right)$$

# 사인 함수표

\*  $x \mapsto \sin\left(\frac{\pi}{2}x\right)$  의 표

| $z$  | 0                   | 1                   | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   |
|------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 0.00 | 0                   | 15708 <sub>-3</sub> | 31416 <sub>-3</sub> | 47124 <sub>-3</sub> | 62831 <sub>-3</sub> | 78539 <sub>-3</sub> | 94246 <sub>-3</sub> | 10995 <sub>-2</sub> | 12566 <sub>-2</sub> | 14137 <sub>-2</sub> |
| 0.01 | 15707 <sub>-2</sub> | 17278 <sub>-2</sub> | 18848 <sub>-2</sub> | 20419 <sub>-2</sub> | 21989 <sub>-2</sub> | 23560 <sub>-2</sub> | 25130 <sub>-2</sub> | 26700 <sub>-2</sub> | 28271 <sub>-2</sub> | 29841 <sub>-2</sub> |
| 0.02 | 31411 <sub>-2</sub> | 32981 <sub>-2</sub> | 34551 <sub>-2</sub> | 36120 <sub>-2</sub> | 37690 <sub>-2</sub> | 39260 <sub>-2</sub> | 40829 <sub>-2</sub> | 42399 <sub>-2</sub> | 43968 <sub>-2</sub> | 45537 <sub>-2</sub> |
| 0.03 | 47106 <sub>-2</sub> | 48675 <sub>-2</sub> | 50244 <sub>-2</sub> | 51813 <sub>-2</sub> | 53382 <sub>-2</sub> | 54950 <sub>-2</sub> | 56519 <sub>-2</sub> | 58087 <sub>-2</sub> | 59655 <sub>-2</sub> | 61223 <sub>-2</sub> |
| 0.04 | 62791 <sub>-2</sub> | 64358 <sub>-2</sub> | 65926 <sub>-2</sub> | 67493 <sub>-2</sub> | 69060 <sub>-2</sub> | 70627 <sub>-2</sub> | 72194 <sub>-2</sub> | 73760 <sub>-2</sub> | 75327 <sub>-2</sub> | 76893 <sub>-2</sub> |
| 0.05 | 78459 <sub>-2</sub> | 80025 <sub>-2</sub> | 81591 <sub>-2</sub> | 83156 <sub>-2</sub> | 84721 <sub>-2</sub> | 86286 <sub>-2</sub> | 87851 <sub>-2</sub> | 89416 <sub>-2</sub> | 90980 <sub>-2</sub> | 92544 <sub>-2</sub> |
| 0.06 | 94108 <sub>-2</sub> | 95672 <sub>-2</sub> | 97235 <sub>-2</sub> | 98799 <sub>-2</sub> | 10036 <sub>-1</sub> | 10192 <sub>-1</sub> | 10349 <sub>-1</sub> | 10505 <sub>-1</sub> | 10661 <sub>-1</sub> | 10817 <sub>-1</sub> |
| 0.07 | 10973 <sub>-1</sub> | 11130 <sub>-1</sub> | 11286 <sub>-1</sub> | 11442 <sub>-1</sub> | 11598 <sub>-1</sub> | 11754 <sub>-1</sub> | 11910 <sub>-1</sub> | 12066 <sub>-1</sub> | 12222 <sub>-1</sub> | 12377 <sub>-1</sub> |
| 0.08 | 12533 <sub>-1</sub> | 12689 <sub>-1</sub> | 12845 <sub>-1</sub> | 13001 <sub>-1</sub> | 13156 <sub>-1</sub> | 13312 <sub>-1</sub> | 13468 <sub>-1</sub> | 13623 <sub>-1</sub> | 13779 <sub>-1</sub> | 13935 <sub>-1</sub> |
| 0.09 | 14090 <sub>-1</sub> | 14246 <sub>-1</sub> | 14401 <sub>-1</sub> | 14557 <sub>-1</sub> | 14712 <sub>-1</sub> | 14867 <sub>-1</sub> | 15023 <sub>-1</sub> | 15178 <sub>-1</sub> | 15333 <sub>-1</sub> | 15488 <sub>-1</sub> |
| 0.10 | 15643 <sub>-1</sub> | 15799 <sub>-1</sub> | 15954 <sub>-1</sub> | 16109 <sub>-1</sub> | 16264 <sub>-1</sub> | 16419 <sub>-1</sub> | 16574 <sub>-1</sub> | 16728 <sub>-1</sub> | 16883 <sub>-1</sub> | 17038 <sub>-1</sub> |
| 0.11 | 17193 <sub>-1</sub> | 17348 <sub>-1</sub> | 17502 <sub>-1</sub> | 17657 <sub>-1</sub> | 17812 <sub>-1</sub> | 17966 <sub>-1</sub> | 18121 <sub>-1</sub> | 18275 <sub>-1</sub> | 18429 <sub>-1</sub> | 18584 <sub>-1</sub> |
| 0.12 | 18738 <sub>-1</sub> | 18892 <sub>-1</sub> | 19047 <sub>-1</sub> | 19201 <sub>-1</sub> | 19355 <sub>-1</sub> | 19509 <sub>-1</sub> | 19663 <sub>-1</sub> | 19817 <sub>-1</sub> | 19971 <sub>-1</sub> | 20125 <sub>-1</sub> |
| 0.13 | 20279 <sub>-1</sub> | 20433 <sub>-1</sub> | 20586 <sub>-1</sub> | 20740 <sub>-1</sub> | 20894 <sub>-1</sub> | 21047 <sub>-1</sub> | 21201 <sub>-1</sub> | 21354 <sub>-1</sub> | 21508 <sub>-1</sub> | 21661 <sub>-1</sub> |
| 0.14 | 21814 <sub>-1</sub> | 21968 <sub>-1</sub> | 22121 <sub>-1</sub> | 22274 <sub>-1</sub> | 22427 <sub>-1</sub> | 22580 <sub>-1</sub> | 22733 <sub>-1</sub> | 22886 <sub>-1</sub> | 23039 <sub>-1</sub> | 23192 <sub>-1</sub> |
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| 0.17 | 26387 <sub>-1</sub> | 26539 <sub>-1</sub> | 26690 <sub>-1</sub> | 26842 <sub>-1</sub> | 26993 <sub>-1</sub> | 27144 <sub>-1</sub> | 27295 <sub>-1</sub> | 27446 <sub>-1</sub> | 27597 <sub>-1</sub> | 27748 <sub>-1</sub> |
| 0.18 | 27899 <sub>-1</sub> | 28050 <sub>-1</sub> | 28201 <sub>-1</sub> | 28351 <sub>-1</sub> | 28502 <sub>-1</sub> | 28652 <sub>-1</sub> | 28803 <sub>-1</sub> | 28953 <sub>-1</sub> | 29104 <sub>-1</sub> | 29254 <sub>-1</sub> |
| 0.19 | 29404 <sub>-1</sub> | 29554 <sub>-1</sub> | 29704 <sub>-1</sub> | 29854 <sub>-1</sub> | 30004 <sub>-1</sub> | 30154 <sub>-1</sub> | 30304 <sub>-1</sub> | 30453 <sub>-1</sub> | 30603 <sub>-1</sub> | 30752 <sub>-1</sub> |
| 0.20 | 30902 <sub>-1</sub> | 31051 <sub>-1</sub> | 31200 <sub>-1</sub> | 31350 <sub>-1</sub> | 31499 <sub>-1</sub> | 31648 <sub>-1</sub> | 31797 <sub>-1</sub> | 31946 <sub>-1</sub> | 32094 <sub>-1</sub> | 32243 <sub>-1</sub> |
| 0.21 | 32392 <sub>-1</sub> | 32540 <sub>-1</sub> | 32689 <sub>-1</sub> | 32837 <sub>-1</sub> | 32986 <sub>-1</sub> | 33134 <sub>-1</sub> | 33282 <sub>-1</sub> | 33430 <sub>-1</sub> | 33578 <sub>-1</sub> | 33726 <sub>-1</sub> |
| 0.22 | 33874 <sub>-1</sub> | 34022 <sub>-1</sub> | 34169 <sub>-1</sub> | 34317 <sub>-1</sub> | 34464 <sub>-1</sub> | 34612 <sub>-1</sub> | 34759 <sub>-1</sub> | 34906 <sub>-1</sub> | 35053 <sub>-1</sub> | 35201 <sub>-1</sub> |
| 0.23 | 35347 <sub>-1</sub> | 35494 <sub>-1</sub> | 35641 <sub>-1</sub> | 35788 <sub>-1</sub> | 35935 <sub>-1</sub> | 36081 <sub>-1</sub> | 36228 <sub>-1</sub> | 36374 <sub>-1</sub> | 36520 <sub>-1</sub> | 36666 <sub>-1</sub> |
| 0.24 | 36812 <sub>-1</sub> | 36958 <sub>-1</sub> | 37104 <sub>-1</sub> | 37250 <sub>-1</sub> | 37396 <sub>-1</sub> | 37542 <sub>-1</sub> | 37687 <sub>-1</sub> | 37833 <sub>-1</sub> | 37978 <sub>-1</sub> | 38123 <sub>-1</sub> |
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| 0.27 | 41151 <sub>-1</sub> | 41295 <sub>-1</sub> | 41438 <sub>-1</sub> | 41580 <sub>-1</sub> | 41723 <sub>-1</sub> | 41866 <sub>-1</sub> | 42009 <sub>-1</sub> | 42151 <sub>-1</sub> | 42293 <sub>-1</sub> | 42436 <sub>-1</sub> |
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| 0.40 | 58779 <sub>-1</sub> | 58906 <sub>-1</sub> | 59032 <sub>-1</sub> | 59159 <sub>-1</sub> | 59286 <sub>-1</sub> | 59412 <sub>-1</sub> | 59538 <sub>-1</sub> | 59665 <sub>-1</sub> | 59790 <sub>-1</sub> | 59916 <sub>-1</sub> |
| 0.41 | 60042 <sub>-1</sub> | 60168 <sub>-1</sub> | 60293 <sub>-1</sub> | 60418 <sub>-1</sub> | 60543 <sub>-1</sub> | 60668 <sub>-1</sub> | 60793 <sub>-1</sub> | 60918 <sub>-1</sub> | 61042 <sub>-1</sub> | 61167 <sub>-1</sub> |
| 0.42 | 61291 <sub>-1</sub> | 61415 <sub>-1</sub> | 61539 <sub>-1</sub> | 61662 <sub>-1</sub> | 61786 <sub>-1</sub> | 61909 <sub>-1</sub> | 62033 <sub>-1</sub> | 62156 <sub>-1</sub> | 62279 <sub>-1</sub> | 62402 <sub>-1</sub> |
| 0.43 | 62524 <sub>-1</sub> | 62647 <sub>-1</sub> | 62769 <sub>-1</sub> | 62891 <sub>-1</sub> | 63013 <sub>-1</sub> | 63135 <sub>-1</sub> | 63257 <sub>-1</sub> | 63379 <sub>-1</sub> | 63500 <sub>-1</sub> | 63621 <sub>-1</sub> |
| 0.44 | 63742 <sub>-1</sub> | 63863 <sub>-1</sub> | 63984 <sub>-1</sub> | 64105 <sub>-1</sub> | 64225 <sub>-1</sub> | 64346 <sub>-1</sub> | 64466 <sub>-1</sub> | 64586 <sub>-1</sub> | 64706 <sub>-1</sub> | 64825 <sub>-1</sub> |
| 0.45 | 64945 <sub>-1</sub> | 65064 <sub>-1</sub> | 65183 <sub>-1</sub> | 65302 <sub>-1</sub> | 65421 <sub>-1</sub> | 65540 <sub>-1</sub> | 65659 <sub>-1</sub> | 65777 <sub>-1</sub> | 65895 <sub>-1</sub> | 66013 <sub>-1</sub> |

|      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 0.46 | 66131 <sub>-1</sub> | 66249 <sub>-1</sub> | 66367 <sub>-1</sub> | 66484 <sub>-1</sub> | 66601 <sub>-1</sub> | 66718 <sub>-1</sub> | 66835 <sub>-1</sub> | 66952 <sub>-1</sub> | 67069 <sub>-1</sub> | 67185 <sub>-1</sub> |
| 0.47 | 67301 <sub>-1</sub> | 67417 <sub>-1</sub> | 67533 <sub>-1</sub> | 67649 <sub>-1</sub> | 67765 <sub>-1</sub> | 67880 <sub>-1</sub> | 67995 <sub>-1</sub> | 68110 <sub>-1</sub> | 68225 <sub>-1</sub> | 68340 <sub>-1</sub> |
| 0.48 | 68455 <sub>-1</sub> | 68569 <sub>-1</sub> | 68683 <sub>-1</sub> | 68797 <sub>-1</sub> | 68911 <sub>-1</sub> | 69025 <sub>-1</sub> | 69139 <sub>-1</sub> | 69252 <sub>-1</sub> | 69365 <sub>-1</sub> | 69478 <sub>-1</sub> |
| 0.49 | 69591 <sub>-1</sub> | 69704 <sub>-1</sub> | 69817 <sub>-1</sub> | 69929 <sub>-1</sub> | 70041 <sub>-1</sub> | 70153 <sub>-1</sub> | 70265 <sub>-1</sub> | 70377 <sub>-1</sub> | 70488 <sub>-1</sub> | 70600 <sub>-1</sub> |
| 0.50 | 70711 <sub>-1</sub> | 70822 <sub>-1</sub> | 70932 <sub>-1</sub> | 71043 <sub>-1</sub> | 71154 <sub>-1</sub> | 71264 <sub>-1</sub> | 71374 <sub>-1</sub> | 71484 <sub>-1</sub> | 71594 <sub>-1</sub> | 71703 <sub>-1</sub> |
| 0.51 | 71813 <sub>-1</sub> | 71922 <sub>-1</sub> | 72031 <sub>-1</sub> | 72140 <sub>-1</sub> | 72248 <sub>-1</sub> | 72357 <sub>-1</sub> | 72465 <sub>-1</sub> | 72573 <sub>-1</sub> | 72681 <sub>-1</sub> | 72789 <sub>-1</sub> |
| 0.52 | 72897 <sub>-1</sub> | 73004 <sub>-1</sub> | 73112 <sub>-1</sub> | 73219 <sub>-1</sub> | 73326 <sub>-1</sub> | 73432 <sub>-1</sub> | 73539 <sub>-1</sub> | 73645 <sub>-1</sub> | 73751 <sub>-1</sub> | 73857 <sub>-1</sub> |
| 0.53 | 73963 <sub>-1</sub> | 74069 <sub>-1</sub> | 74174 <sub>-1</sub> | 74279 <sub>-1</sub> | 74385 <sub>-1</sub> | 74489 <sub>-1</sub> | 74594 <sub>-1</sub> | 74699 <sub>-1</sub> | 74803 <sub>-1</sub> | 74907 <sub>-1</sub> |
| 0.54 | 75011 <sub>-1</sub> | 75115 <sub>-1</sub> | 75218 <sub>-1</sub> | 75322 <sub>-1</sub> | 75425 <sub>-1</sub> | 75528 <sub>-1</sub> | 75631 <sub>-1</sub> | 75734 <sub>-1</sub> | 75836 <sub>-1</sub> | 75938 <sub>-1</sub> |
| 0.55 | 76041 <sub>-1</sub> | 76143 <sub>-1</sub> | 76244 <sub>-1</sub> | 76346 <sub>-1</sub> | 76447 <sub>-1</sub> | 76548 <sub>-1</sub> | 76649 <sub>-1</sub> | 76750 <sub>-1</sub> | 76851 <sub>-1</sub> | 76951 <sub>-1</sub> |
| 0.56 | 77051 <sub>-1</sub> | 77151 <sub>-1</sub> | 77251 <sub>-1</sub> | 77351 <sub>-1</sub> | 77450 <sub>-1</sub> | 77550 <sub>-1</sub> | 77649 <sub>-1</sub> | 77748 <sub>-1</sub> | 77846 <sub>-1</sub> | 77945 <sub>-1</sub> |
| 0.57 | 78043 <sub>-1</sub> | 78141 <sub>-1</sub> | 78239 <sub>-1</sub> | 78337 <sub>-1</sub> | 78434 <sub>-1</sub> | 78532 <sub>-1</sub> | 78629 <sub>-1</sub> | 78726 <sub>-1</sub> | 78823 <sub>-1</sub> | 78919 <sub>-1</sub> |
| 0.58 | 79016 <sub>-1</sub> | 79112 <sub>-1</sub> | 79208 <sub>-1</sub> | 79303 <sub>-1</sub> | 79399 <sub>-1</sub> | 79494 <sub>-1</sub> | 79590 <sub>-1</sub> | 79685 <sub>-1</sub> | 79779 <sub>-1</sub> | 79874 <sub>-1</sub> |
| 0.59 | 79968 <sub>-1</sub> | 80063 <sub>-1</sub> | 80157 <sub>-1</sub> | 80251 <sub>-1</sub> | 80344 <sub>-1</sub> | 80438 <sub>-1</sub> | 80531 <sub>-1</sub> | 80624 <sub>-1</sub> | 80717 <sub>-1</sub> | 80809 <sub>-1</sub> |
| 0.60 | 80902 <sub>-1</sub> | 80994 <sub>-1</sub> | 81086 <sub>-1</sub> | 81178 <sub>-1</sub> | 81269 <sub>-1</sub> | 81361 <sub>-1</sub> | 81452 <sub>-1</sub> | 81543 <sub>-1</sub> | 81634 <sub>-1</sub> | 81725 <sub>-1</sub> |
| 0.61 | 81815 <sub>-1</sub> | 81905 <sub>-1</sub> | 81995 <sub>-1</sub> | 82085 <sub>-1</sub> | 82175 <sub>-1</sub> | 82264 <sub>-1</sub> | 82353 <sub>-1</sub> | 82442 <sub>-1</sub> | 82531 <sub>-1</sub> | 82620 <sub>-1</sub> |
| 0.62 | 82708 <sub>-1</sub> | 82796 <sub>-1</sub> | 82884 <sub>-1</sub> | 82972 <sub>-1</sub> | 83060 <sub>-1</sub> | 83147 <sub>-1</sub> | 83234 <sub>-1</sub> | 83321 <sub>-1</sub> | 83408 <sub>-1</sub> | 83494 <sub>-1</sub> |
| 0.63 | 83581 <sub>-1</sub> | 83667 <sub>-1</sub> | 83753 <sub>-1</sub> | 83839 <sub>-1</sub> | 83924 <sub>-1</sub> | 84009 <sub>-1</sub> | 84094 <sub>-1</sub> | 84179 <sub>-1</sub> | 84264 <sub>-1</sub> | 84349 <sub>-1</sub> |
| 0.64 | 84433 <sub>-1</sub> | 84517 <sub>-1</sub> | 84601 <sub>-1</sub> | 84684 <sub>-1</sub> | 84768 <sub>-1</sub> | 84851 <sub>-1</sub> | 84934 <sub>-1</sub> | 85017 <sub>-1</sub> | 85099 <sub>-1</sub> | 85182 <sub>-1</sub> |
| 0.65 | 85264 <sub>-1</sub> | 85346 <sub>-1</sub> | 85428 <sub>-1</sub> | 85509 <sub>-1</sub> | 85591 <sub>-1</sub> | 85672 <sub>-1</sub> | 85753 <sub>-1</sub> | 85833 <sub>-1</sub> | 85914 <sub>-1</sub> | 85994 <sub>-1</sub> |
| 0.66 | 86074 <sub>-1</sub> | 86154 <sub>-1</sub> | 86234 <sub>-1</sub> | 86313 <sub>-1</sub> | 86392 <sub>-1</sub> | 86471 <sub>-1</sub> | 86550 <sub>-1</sub> | 86629 <sub>-1</sub> | 86707 <sub>-1</sub> | 86785 <sub>-1</sub> |
| 0.67 | 86863 <sub>-1</sub> | 86941 <sub>-1</sub> | 87018 <sub>-1</sub> | 87096 <sub>-1</sub> | 87173 <sub>-1</sub> | 87250 <sub>-1</sub> | 87326 <sub>-1</sub> | 87403 <sub>-1</sub> | 87479 <sub>-1</sub> | 87555 <sub>-1</sub> |
| 0.68 | 87631 <sub>-1</sub> | 87706 <sub>-1</sub> | 87782 <sub>-1</sub> | 87857 <sub>-1</sub> | 87932 <sub>-1</sub> | 88006 <sub>-1</sub> | 88081 <sub>-1</sub> | 88155 <sub>-1</sub> | 88229 <sub>-1</sub> | 88303 <sub>-1</sub> |
| 0.69 | 88377 <sub>-1</sub> | 88450 <sub>-1</sub> | 88523 <sub>-1</sub> | 88596 <sub>-1</sub> | 88669 <sub>-1</sub> | 88741 <sub>-1</sub> | 88814 <sub>-1</sub> | 88886 <sub>-1</sub> | 88958 <sub>-1</sub> | 89029 <sub>-1</sub> |
| 0.70 | 89101 <sub>-1</sub> | 89172 <sub>-1</sub> | 89243 <sub>-1</sub> | 89314 <sub>-1</sub> | 89384 <sub>-1</sub> | 89454 <sub>-1</sub> | 89525 <sub>-1</sub> | 89594 <sub>-1</sub> | 89664 <sub>-1</sub> | 89734 <sub>-1</sub> |
| 0.71 | 89803 <sub>-1</sub> | 89872 <sub>-1</sub> | 89941 <sub>-1</sub> | 90009 <sub>-1</sub> | 90077 <sub>-1</sub> | 90146 <sub>-1</sub> | 90213 <sub>-1</sub> | 90281 <sub>-1</sub> | 90348 <sub>-1</sub> | 90416 <sub>-1</sub> |
| 0.72 | 90483 <sub>-1</sub> | 90549 <sub>-1</sub> | 90616 <sub>-1</sub> | 90682 <sub>-1</sub> | 90748 <sub>-1</sub> | 90814 <sub>-1</sub> | 90880 <sub>-1</sub> | 90945 <sub>-1</sub> | 91011 <sub>-1</sub> | 91076 <sub>-1</sub> |
| 0.73 | 91140 <sub>-1</sub> | 91205 <sub>-1</sub> | 91269 <sub>-1</sub> | 91333 <sub>-1</sub> | 91397 <sub>-1</sub> | 91461 <sub>-1</sub> | 91524 <sub>-1</sub> | 91587 <sub>-1</sub> | 91650 <sub>-1</sub> | 91713 <sub>-1</sub> |
| 0.74 | 91775 <sub>-1</sub> | 91838 <sub>-1</sub> | 91900 <sub>-1</sub> | 91962 <sub>-1</sub> | 92023 <sub>-1</sub> | 92085 <sub>-1</sub> | 92146 <sub>-1</sub> | 92207 <sub>-1</sub> | 92267 <sub>-1</sub> | 92328 <sub>-1</sub> |
| 0.75 | 92388 <sub>-1</sub> | 92448 <sub>-1</sub> | 92508 <sub>-1</sub> | 92567 <sub>-1</sub> | 92627 <sub>-1</sub> | 92686 <sub>-1</sub> | 92745 <sub>-1</sub> | 92803 <sub>-1</sub> | 92862 <sub>-1</sub> | 92920 <sub>-1</sub> |
| 0.76 | 92978 <sub>-1</sub> | 93035 <sub>-1</sub> | 93093 <sub>-1</sub> | 93150 <sub>-1</sub> | 93207 <sub>-1</sub> | 93264 <sub>-1</sub> | 93320 <sub>-1</sub> | 93377 <sub>-1</sub> | 93433 <sub>-1</sub> | 93489 <sub>-1</sub> |
| 0.77 | 93544 <sub>-1</sub> | 93600 <sub>-1</sub> | 93655 <sub>-1</sub> | 93710 <sub>-1</sub> | 93765 <sub>-1</sub> | 93819 <sub>-1</sub> | 93873 <sub>-1</sub> | 93927 <sub>-1</sub> | 93981 <sub>-1</sub> | 94035 <sub>-1</sub> |
| 0.78 | 94088 <sub>-1</sub> | 94141 <sub>-1</sub> | 94194 <sub>-1</sub> | 94247 <sub>-1</sub> | 94299 <sub>-1</sub> | 94351 <sub>-1</sub> | 94403 <sub>-1</sub> | 94455 <sub>-1</sub> | 94506 <sub>-1</sub> | 94558 <sub>-1</sub> |
| 0.79 | 94609 <sub>-1</sub> | 94659 <sub>-1</sub> | 94710 <sub>-1</sub> | 94760 <sub>-1</sub> | 94810 <sub>-1</sub> | 94860 <sub>-1</sub> | 94910 <sub>-1</sub> | 94959 <sub>-1</sub> | 95008 <sub>-1</sub> | 95057 <sub>-1</sub> |
| 0.80 | 95106 <sub>-1</sub> | 95154 <sub>-1</sub> | 95202 <sub>-1</sub> | 95250 <sub>-1</sub> | 95298 <sub>-1</sub> | 95345 <sub>-1</sub> | 95393 <sub>-1</sub> | 95440 <sub>-1</sub> | 95486 <sub>-1</sub> | 95533 <sub>-1</sub> |
| 0.81 | 95579 <sub>-1</sub> | 95625 <sub>-1</sub> | 95671 <sub>-1</sub> | 95717 <sub>-1</sub> | 95762 <sub>-1</sub> | 95807 <sub>-1</sub> | 95852 <sub>-1</sub> | 95897 <sub>-1</sub> | 95941 <sub>-1</sub> | 95985 <sub>-1</sub> |
| 0.82 | 96029 <sub>-1</sub> | 96073 <sub>-1</sub> | 96117 <sub>-1</sub> | 96160 <sub>-1</sub> | 96203 <sub>-1</sub> | 96246 <sub>-1</sub> | 96288 <sub>-1</sub> | 96330 <sub>-1</sub> | 96372 <sub>-1</sub> | 96414 <sub>-1</sub> |
| 0.83 | 96456 <sub>-1</sub> | 96497 <sub>-1</sub> | 96538 <sub>-1</sub> | 96579 <sub>-1</sub> | 96620 <sub>-1</sub> | 96660 <sub>-1</sub> | 96700 <sub>-1</sub> | 96740 <sub>-1</sub> | 96780 <sub>-1</sub> | 96819 <sub>-1</sub> |
| 0.84 | 96858 <sub>-1</sub> | 96897 <sub>-1</sub> | 96936 <sub>-1</sub> | 96974 <sub>-1</sub> | 97013 <sub>-1</sub> | 97051 <sub>-1</sub> | 97088 <sub>-1</sub> | 97126 <sub>-1</sub> | 97163 <sub>-1</sub> | 97200 <sub>-1</sub> |
| 0.85 | 97237 <sub>-1</sub> | 97274 <sub>-1</sub> | 97310 <sub>-1</sub> | 97346 <sub>-1</sub> | 97382 <sub>-1</sub> | 97417 <sub>-1</sub> | 97453 <sub>-1</sub> | 97488 <sub>-1</sub> | 97523 <sub>-1</sub> | 97557 <sub>-1</sub> |
| 0.86 | 97592 <sub>-1</sub> | 97626 <sub>-1</sub> | 97660 <sub>-1</sub> | 97693 <sub>-1</sub> | 97727 <sub>-1</sub> | 97760 <sub>-1</sub> | 97793 <sub>-1</sub> | 97826 <sub>-1</sub> | 97858 <sub>-1</sub> | 97890 <sub>-1</sub> |
| 0.87 | 97922 <sub>-1</sub> | 97954 <sub>-1</sub> | 97986 <sub>-1</sub> | 98017 <sub>-1</sub> | 98048 <sub>-1</sub> | 98079 <sub>-1</sub> | 98109 <sub>-1</sub> | 98139 <sub>-1</sub> | 98169 <sub>-1</sub> | 98199 <sub>-1</sub> |
| 0.88 | 98229 <sub>-1</sub> | 98258 <sub>-1</sub> | 98287 <sub>-1</sub> | 98316 <sub>-1</sub> | 98345 <sub>-1</sub> | 98373 <sub>-1</sub> | 98401 <sub>-1</sub> | 98429 <sub>-1</sub> | 98456 <sub>-1</sub> | 98484 <sub>-1</sub> |
| 0.89 | 98511 <sub>-1</sub> | 98538 <sub>-1</sub> | 98564 <sub>-1</sub> | 98591 <sub>-1</sub> | 98617 <sub>-1</sub> | 98643 <sub>-1</sub> | 98669 <sub>-1</sub> | 98694 <sub>-1</sub> | 98719 <sub>-1</sub> | 98744 <sub>-1</sub> |
| 0.90 | 98769 <sub>-1</sub> | 98793 <sub>-1</sub> | 98817 <sub>-1</sub> | 98841 <sub>-1</sub> | 98865 <sub>-1</sub> | 98889 <sub>-1</sub> | 98912 <sub>-1</sub> | 98935 <sub>-1</sub> | 98958 <sub>-1</sub> | 98980 <sub>-1</sub> |
| 0.91 | 99002 <sub>-1</sub> | 99024 <sub>-1</sub> | 99046 <sub>-1</sub> | 99068 <sub>-1</sub> | 99089 <sub>-1</sub> | 99110 <sub>-1</sub> | 99131 <sub>-1</sub> | 99151 <sub>-1</sub> | 99172 <sub>-1</sub> | 99192 <sub>-1</sub> |
| 0.92 | 99211 <sub>-1</sub> | 99231 <sub>-1</sub> | 99250 <sub>-1</sub> | 99269 <sub>-1</sub> | 99288 <sub>-1</sub> | 99307 <sub>-1</sub> | 99325 <sub>-1</sub> | 99343 <sub>-1</sub> | 99361 <sub>-1</sub> | 99379 <sub>-1</sub> |
| 0.93 | 99396 <sub>-1</sub> | 99413 <sub>-1</sub> | 99430 <sub>-1</sub> | 99447 <sub>-1</sub> | 99463 <sub>-1</sub> | 99479 <sub>-1</sub> | 99495 <sub>-1</sub> | 99511 <sub>-1</sub> | 99526 <sub>-1</sub> | 99541 <sub>-1</sub> |
| 0.94 | 99556 <sub>-1</sub> | 99571 <sub>-1</sub> | 99585 <sub>-1</sub> | 99599 <sub>-1</sub> | 99613 <sub>-1</sub> | 99627 <sub>-1</sub> | 99640 <sub>-1</sub> | 99654 <sub>-1</sub> | 99667 <sub>-1</sub> | 99679 <sub>-1</sub> |
| 0.95 | 99692 <sub>-1</sub> | 99704 <sub>-1</sub> | 99716 <sub>-1</sub> | 99728 <sub>-1</sub> | 99739 <sub>-1</sub> | 99750 <sub>-1</sub> | 99761 <sub>-1</sub> | 99772 <sub>-1</sub> | 99782 <sub>-1</sub> | 99793 <sub>-1</sub> |

|      |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 0.96 | 99803 <sub>-1</sub> | 99812 <sub>-1</sub> | 99822 <sub>-1</sub> | 99831 <sub>-1</sub> | 99840 <sub>-1</sub> | 99849 <sub>-1</sub> | 99857 <sub>-1</sub> | 99866 <sub>-1</sub> | 99874 <sub>-1</sub> | 99881 <sub>-1</sub> |
| 0.97 | 99889 <sub>-1</sub> | 99896 <sub>-1</sub> | 99903 <sub>-1</sub> | 99910 <sub>-1</sub> | 99917 <sub>-1</sub> | 99923 <sub>-1</sub> | 99929 <sub>-1</sub> | 99935 <sub>-1</sub> | 99940 <sub>-1</sub> | 99946 <sub>-1</sub> |
| 0.98 | 99951 <sub>-1</sub> | 99955 <sub>-1</sub> | 99960 <sub>-1</sub> | 99964 <sub>-1</sub> | 99968 <sub>-1</sub> | 99972 <sub>-1</sub> | 99976 <sub>-1</sub> | 99979 <sub>-1</sub> | 99982 <sub>-1</sub> | 99985 <sub>-1</sub> |
| 0.99 | 99988 <sub>-1</sub> | 99990 <sub>-1</sub> | 99992 <sub>-1</sub> | 99994 <sub>-1</sub> | 99996 <sub>-1</sub> | 99997 <sub>-1</sub> | 99998 <sub>-1</sub> | 99999 <sub>-1</sub> | 10000 <sub>+0</sub> | 10000 <sub>+0</sub> |

### 추가 함숫값

- $\Delta x \gg 0$  일 때,

$$\sin\left(\frac{\pi}{2}(x + \Delta x)\right) \approx \sin\left(\frac{\pi}{2}x\right) + \frac{\pi}{2}\sqrt{1 - \sin^2\left(\frac{\pi}{2}x\right)}\Delta x$$

$\Delta x \leq 0.0005$  일 때, 최대 0.00003% 오차를 가진다.

# 정규분포표

\*  $Z \sim N(0, 1^2)$  일 때  $P(0 \leq Z \leq z)$  의 값

| $z$ | 0                   | 1                   | 2                   | 3                   | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   |
|-----|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 0.0 | 0                   | 39894 <sub>-3</sub> | 79783 <sub>-3</sub> | 11966 <sub>-2</sub> | 15953 <sub>-2</sub> | 19939 <sub>-2</sub> | 23922 <sub>-2</sub> | 27903 <sub>-2</sub> | 31881 <sub>-2</sub> | 35856 <sub>-2</sub> |
| 0.1 | 39828 <sub>-2</sub> | 43795 <sub>-2</sub> | 47758 <sub>-2</sub> | 51717 <sub>-2</sub> | 55670 <sub>-2</sub> | 59618 <sub>-2</sub> | 63559 <sub>-2</sub> | 67495 <sub>-2</sub> | 71424 <sub>-2</sub> | 75345 <sub>-2</sub> |
| 0.2 | 79260 <sub>-2</sub> | 83166 <sub>-2</sub> | 87064 <sub>-2</sub> | 90954 <sub>-2</sub> | 94835 <sub>-2</sub> | 98706 <sub>-2</sub> | 10257 <sub>-1</sub> | 10642 <sub>-1</sub> | 11026 <sub>-1</sub> | 11409 <sub>-1</sub> |
| 0.3 | 11791 <sub>-1</sub> | 12172 <sub>-1</sub> | 12552 <sub>-1</sub> | 12930 <sub>-1</sub> | 13307 <sub>-1</sub> | 13683 <sub>-1</sub> | 14058 <sub>-1</sub> | 14431 <sub>-1</sub> | 14803 <sub>-1</sub> | 15173 <sub>-1</sub> |
| 0.4 | 15542 <sub>-1</sub> | 15910 <sub>-1</sub> | 16276 <sub>-1</sub> | 16640 <sub>-1</sub> | 17003 <sub>-1</sub> | 17364 <sub>-1</sub> | 17724 <sub>-1</sub> | 18082 <sub>-1</sub> | 18439 <sub>-1</sub> | 18793 <sub>-1</sub> |
| 0.5 | 19146 <sub>-1</sub> | 19497 <sub>-1</sub> | 19847 <sub>-1</sub> | 20194 <sub>-1</sub> | 20540 <sub>-1</sub> | 20884 <sub>-1</sub> | 21226 <sub>-1</sub> | 21566 <sub>-1</sub> | 21904 <sub>-1</sub> | 22240 <sub>-1</sub> |
| 0.6 | 22575 <sub>-1</sub> | 22907 <sub>-1</sub> | 23237 <sub>-1</sub> | 23565 <sub>-1</sub> | 23891 <sub>-1</sub> | 24215 <sub>-1</sub> | 24537 <sub>-1</sub> | 24857 <sub>-1</sub> | 25175 <sub>-1</sub> | 25490 <sub>-1</sub> |
| 0.7 | 25804 <sub>-1</sub> | 26115 <sub>-1</sub> | 26424 <sub>-1</sub> | 26730 <sub>-1</sub> | 27035 <sub>-1</sub> | 27337 <sub>-1</sub> | 27637 <sub>-1</sub> | 27935 <sub>-1</sub> | 28230 <sub>-1</sub> | 28524 <sub>-1</sub> |
| 0.8 | 28814 <sub>-1</sub> | 29103 <sub>-1</sub> | 29389 <sub>-1</sub> | 29673 <sub>-1</sub> | 29955 <sub>-1</sub> | 30234 <sub>-1</sub> | 30511 <sub>-1</sub> | 30785 <sub>-1</sub> | 31057 <sub>-1</sub> | 31327 <sub>-1</sub> |
| 0.9 | 31594 <sub>-1</sub> | 31859 <sub>-1</sub> | 32121 <sub>-1</sub> | 32381 <sub>-1</sub> | 32639 <sub>-1</sub> | 32894 <sub>-1</sub> | 33147 <sub>-1</sub> | 33398 <sub>-1</sub> | 33646 <sub>-1</sub> | 33891 <sub>-1</sub> |
| 1.0 | 34134 <sub>-1</sub> | 34375 <sub>-1</sub> | 34614 <sub>-1</sub> | 34849 <sub>-1</sub> | 35083 <sub>-1</sub> | 35314 <sub>-1</sub> | 35543 <sub>-1</sub> | 35769 <sub>-1</sub> | 35993 <sub>-1</sub> | 36214 <sub>-1</sub> |
| 1.1 | 36433 <sub>-1</sub> | 36650 <sub>-1</sub> | 36864 <sub>-1</sub> | 37076 <sub>-1</sub> | 37286 <sub>-1</sub> | 37493 <sub>-1</sub> | 37698 <sub>-1</sub> | 37900 <sub>-1</sub> | 38100 <sub>-1</sub> | 38298 <sub>-1</sub> |
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| 1.3 | 40320 <sub>-1</sub> | 40490 <sub>-1</sub> | 40658 <sub>-1</sub> | 40824 <sub>-1</sub> | 40988 <sub>-1</sub> | 41149 <sub>-1</sub> | 41309 <sub>-1</sub> | 41466 <sub>-1</sub> | 41621 <sub>-1</sub> | 41774 <sub>-1</sub> |
| 1.4 | 41924 <sub>-1</sub> | 42073 <sub>-1</sub> | 42220 <sub>-1</sub> | 42364 <sub>-1</sub> | 42507 <sub>-1</sub> | 42647 <sub>-1</sub> | 42785 <sub>-1</sub> | 42922 <sub>-1</sub> | 43056 <sub>-1</sub> | 43189 <sub>-1</sub> |
| 1.5 | 43319 <sub>-1</sub> | 43448 <sub>-1</sub> | 43574 <sub>-1</sub> | 43699 <sub>-1</sub> | 43822 <sub>-1</sub> | 43943 <sub>-1</sub> | 44062 <sub>-1</sub> | 44179 <sub>-1</sub> | 44295 <sub>-1</sub> | 44408 <sub>-1</sub> |
| 1.6 | 44520 <sub>-1</sub> | 44630 <sub>-1</sub> | 44738 <sub>-1</sub> | 44845 <sub>-1</sub> | 44950 <sub>-1</sub> | 45053 <sub>-1</sub> | 45154 <sub>-1</sub> | 45254 <sub>-1</sub> | 45352 <sub>-1</sub> | 45449 <sub>-1</sub> |
| 1.7 | 45543 <sub>-1</sub> | 45637 <sub>-1</sub> | 45728 <sub>-1</sub> | 45818 <sub>-1</sub> | 45907 <sub>-1</sub> | 45994 <sub>-1</sub> | 46080 <sub>-1</sub> | 46164 <sub>-1</sub> | 46246 <sub>-1</sub> | 46327 <sub>-1</sub> |
| 1.8 | 46407 <sub>-1</sub> | 46485 <sub>-1</sub> | 46562 <sub>-1</sub> | 46638 <sub>-1</sub> | 46712 <sub>-1</sub> | 46784 <sub>-1</sub> | 46856 <sub>-1</sub> | 46926 <sub>-1</sub> | 46995 <sub>-1</sub> | 47062 <sub>-1</sub> |
| 1.9 | 47128 <sub>-1</sub> | 47193 <sub>-1</sub> | 47257 <sub>-1</sub> | 47320 <sub>-1</sub> | 47381 <sub>-1</sub> | 47441 <sub>-1</sub> | 47500 <sub>-1</sub> | 47558 <sub>-1</sub> | 47615 <sub>-1</sub> | 47670 <sub>-1</sub> |
| 2.0 | 47725 <sub>-1</sub> | 47778 <sub>-1</sub> | 47831 <sub>-1</sub> | 47882 <sub>-1</sub> | 47932 <sub>-1</sub> | 47982 <sub>-1</sub> | 48030 <sub>-1</sub> | 48077 <sub>-1</sub> | 48124 <sub>-1</sub> | 48169 <sub>-1</sub> |
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| 2.2 | 48610 <sub>-1</sub> | 48645 <sub>-1</sub> | 48679 <sub>-1</sub> | 48713 <sub>-1</sub> | 48745 <sub>-1</sub> | 48778 <sub>-1</sub> | 48809 <sub>-1</sub> | 48840 <sub>-1</sub> | 48870 <sub>-1</sub> | 48899 <sub>-1</sub> |
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| 2.4 | 49180 <sub>-1</sub> | 49202 <sub>-1</sub> | 49224 <sub>-1</sub> | 49245 <sub>-1</sub> | 49266 <sub>-1</sub> | 49286 <sub>-1</sub> | 49305 <sub>-1</sub> | 49324 <sub>-1</sub> | 49343 <sub>-1</sub> | 49361 <sub>-1</sub> |
| 2.5 | 49379 <sub>-1</sub> | 49396 <sub>-1</sub> | 49413 <sub>-1</sub> | 49430 <sub>-1</sub> | 49446 <sub>-1</sub> | 49461 <sub>-1</sub> | 49477 <sub>-1</sub> | 49492 <sub>-1</sub> | 49506 <sub>-1</sub> | 49520 <sub>-1</sub> |
| 2.6 | 49534 <sub>-1</sub> | 49547 <sub>-1</sub> | 49560 <sub>-1</sub> | 49573 <sub>-1</sub> | 49585 <sub>-1</sub> | 49598 <sub>-1</sub> | 49609 <sub>-1</sub> | 49621 <sub>-1</sub> | 49632 <sub>-1</sub> | 49643 <sub>-1</sub> |
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| 2.9 | 49813 <sub>-1</sub> | 49819 <sub>-1</sub> | 49825 <sub>-1</sub> | 49831 <sub>-1</sub> | 49836 <sub>-1</sub> | 49841 <sub>-1</sub> | 49846 <sub>-1</sub> | 49851 <sub>-1</sub> | 49856 <sub>-1</sub> | 49861 <sub>-1</sub> |
| 3.0 | 49865 <sub>-1</sub> | 49869 <sub>-1</sub> | 49874 <sub>-1</sub> | 49878 <sub>-1</sub> | 49882 <sub>-1</sub> | 49886 <sub>-1</sub> | 49889 <sub>-1</sub> | 49893 <sub>-1</sub> | 49896 <sub>-1</sub> | 49900 <sub>-1</sub> |
| 3.1 | 49903 <sub>-1</sub> | 49906 <sub>-1</sub> | 49910 <sub>-1</sub> | 49913 <sub>-1</sub> | 49916 <sub>-1</sub> | 49918 <sub>-1</sub> | 49921 <sub>-1</sub> | 49924 <sub>-1</sub> | 49926 <sub>-1</sub> | 49929 <sub>-1</sub> |
| 3.2 | 49931 <sub>-1</sub> | 49934 <sub>-1</sub> | 49936 <sub>-1</sub> | 49938 <sub>-1</sub> | 49940 <sub>-1</sub> | 49942 <sub>-1</sub> | 49944 <sub>-1</sub> | 49946 <sub>-1</sub> | 49948 <sub>-1</sub> | 49950 <sub>-1</sub> |
| 3.3 | 49952 <sub>-1</sub> | 49953 <sub>-1</sub> | 49955 <sub>-1</sub> | 49957 <sub>-1</sub> | 49958 <sub>-1</sub> | 49960 <sub>-1</sub> | 49961 <sub>-1</sub> | 49962 <sub>-1</sub> | 49964 <sub>-1</sub> | 49965 <sub>-1</sub> |
| 3.4 | 49966 <sub>-1</sub> | 49968 <sub>-1</sub> | 49969 <sub>-1</sub> | 49970 <sub>-1</sub> | 49971 <sub>-1</sub> | 49972 <sub>-1</sub> | 49973 <sub>-1</sub> | 49974 <sub>-1</sub> | 49975 <sub>-1</sub> | 49976 <sub>-1</sub> |
| 3.5 | 49977 <sub>-1</sub> | 49978 <sub>-1</sub> | 49978 <sub>-1</sub> | 49979 <sub>-1</sub> | 49980 <sub>-1</sub> | 49981 <sub>-1</sub> | 49981 <sub>-1</sub> | 49982 <sub>-1</sub> | 49983 <sub>-1</sub> | 49983 <sub>-1</sub> |
| 3.6 | 49984 <sub>-1</sub> | 49985 <sub>-1</sub> | 49985 <sub>-1</sub> | 49986 <sub>-1</sub> | 49986 <sub>-1</sub> | 49987 <sub>-1</sub> | 49987 <sub>-1</sub> | 49988 <sub>-1</sub> | 49988 <sub>-1</sub> | 49989 <sub>-1</sub> |
| 3.7 | 49989 <sub>-1</sub> | 49990 <sub>-1</sub> | 49990 <sub>-1</sub> | 49990 <sub>-1</sub> | 49991 <sub>-1</sub> | 49991 <sub>-1</sub> | 49992 <sub>-1</sub> | 49992 <sub>-1</sub> | 49992 <sub>-1</sub> | 49992 <sub>-1</sub> |
| 3.8 | 49993 <sub>-1</sub> | 49993 <sub>-1</sub> | 49993 <sub>-1</sub> | 49994 <sub>-1</sub> | 49994 <sub>-1</sub> | 49994 <sub>-1</sub> | 49994 <sub>-1</sub> | 49995 <sub>-1</sub> | 49995 <sub>-1</sub> | 49995 <sub>-1</sub> |
| 3.9 | 49995 <sub>-1</sub> | 49995 <sub>-1</sub> | 49996 <sub>-1</sub> | 49996 <sub>-1</sub> | 49996 <sub>-1</sub> | 49996 <sub>-1</sub> | 49996 <sub>-1</sub> | 49996 <sub>-1</sub> | 49997 <sub>-1</sub> | 49997 <sub>-1</sub> |



# $\chi^2$ 분포표

\* 자유도가  $n$  인  $\chi^2$  분포를 따르는 확률변수  $X$  에 대해  $P(X > x_\alpha) = \alpha$  인  $x_\alpha$  의 값

| $n$ | .005                | .010                | .025                | .050                | .100                | .900                | .950                | .975                | .990                | .995                |
|-----|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1   | 78794 <sub>+0</sub> | 66349 <sub>+0</sub> | 50239 <sub>+0</sub> | 38415 <sub>+0</sub> | 27055 <sub>+0</sub> | 15791 <sub>-2</sub> | 39321 <sub>-3</sub> | 98207 <sub>-4</sub> | 15709 <sub>-4</sub> | 39270 <sub>-5</sub> |
| 2   | 10597 <sub>+1</sub> | 92103 <sub>+0</sub> | 73778 <sub>+0</sub> | 59915 <sub>+0</sub> | 46052 <sub>+0</sub> | 21072 <sub>-1</sub> | 10259 <sub>-1</sub> | 50636 <sub>-2</sub> | 20101 <sub>-2</sub> | 10025 <sub>-2</sub> |
| 3   | 12838 <sub>+1</sub> | 11345 <sub>+1</sub> | 93484 <sub>+0</sub> | 78147 <sub>+0</sub> | 62514 <sub>+0</sub> | 58437 <sub>-1</sub> | 35185 <sub>-1</sub> | 21580 <sub>-1</sub> | 11483 <sub>-1</sub> | 71722 <sub>-2</sub> |
| 4   | 14860 <sub>+1</sub> | 13277 <sub>+1</sub> | 11143 <sub>+1</sub> | 94877 <sub>+0</sub> | 77794 <sub>+0</sub> | 10636 <sub>+0</sub> | 71072 <sub>-1</sub> | 48442 <sub>-1</sub> | 29711 <sub>-1</sub> | 20699 <sub>-1</sub> |
| 5   | 16750 <sub>+1</sub> | 15086 <sub>+1</sub> | 12833 <sub>+1</sub> | 11070 <sub>+1</sub> | 92364 <sub>+0</sub> | 16103 <sub>+0</sub> | 11455 <sub>+0</sub> | 83121 <sub>-1</sub> | 55430 <sub>-1</sub> | 41174 <sub>-1</sub> |
| 6   | 18548 <sub>+1</sub> | 16812 <sub>+1</sub> | 14449 <sub>+1</sub> | 12592 <sub>+1</sub> | 10645 <sub>+1</sub> | 22041 <sub>+0</sub> | 16354 <sub>+0</sub> | 12373 <sub>+0</sub> | 87209 <sub>-1</sub> | 67573 <sub>-1</sub> |
| 7   | 20278 <sub>+1</sub> | 18475 <sub>+1</sub> | 16013 <sub>+1</sub> | 14067 <sub>+1</sub> | 12017 <sub>+1</sub> | 28331 <sub>+0</sub> | 21673 <sub>+0</sub> | 16899 <sub>+0</sub> | 12390 <sub>+0</sub> | 98926 <sub>-1</sub> |
| 8   | 21955 <sub>+1</sub> | 20090 <sub>+1</sub> | 17535 <sub>+1</sub> | 15507 <sub>+1</sub> | 13362 <sub>+1</sub> | 34895 <sub>+0</sub> | 27326 <sub>+0</sub> | 21797 <sub>+0</sub> | 16465 <sub>+0</sub> | 13444 <sub>+0</sub> |
| 9   | 23589 <sub>+1</sub> | 21666 <sub>+1</sub> | 19023 <sub>+1</sub> | 16919 <sub>+1</sub> | 14684 <sub>+1</sub> | 41682 <sub>+0</sub> | 33251 <sub>+0</sub> | 27004 <sub>+0</sub> | 20879 <sub>+0</sub> | 17349 <sub>+0</sub> |
| 10  | 25188 <sub>+1</sub> | 23209 <sub>+1</sub> | 20483 <sub>+1</sub> | 18307 <sub>+1</sub> | 15987 <sub>+1</sub> | 48652 <sub>+0</sub> | 39403 <sub>+0</sub> | 32470 <sub>+0</sub> | 25582 <sub>+0</sub> | 21559 <sub>+0</sub> |
| 11  | 26757 <sub>+1</sub> | 24725 <sub>+1</sub> | 21920 <sub>+1</sub> | 19675 <sub>+1</sub> | 17275 <sub>+1</sub> | 55778 <sub>+0</sub> | 45748 <sub>+0</sub> | 38157 <sub>+0</sub> | 30535 <sub>+0</sub> | 26032 <sub>+0</sub> |
| 12  | 28300 <sub>+1</sub> | 26217 <sub>+1</sub> | 23337 <sub>+1</sub> | 21026 <sub>+1</sub> | 18549 <sub>+1</sub> | 63038 <sub>+0</sub> | 52260 <sub>+0</sub> | 44038 <sub>+0</sub> | 35706 <sub>+0</sub> | 30738 <sub>+0</sub> |
| 13  | 29819 <sub>+1</sub> | 27688 <sub>+1</sub> | 24736 <sub>+1</sub> | 22362 <sub>+1</sub> | 19812 <sub>+1</sub> | 70415 <sub>+0</sub> | 58919 <sub>+0</sub> | 50088 <sub>+0</sub> | 41069 <sub>+0</sub> | 35650 <sub>+0</sub> |
| 14  | 31319 <sub>+1</sub> | 29141 <sub>+1</sub> | 26119 <sub>+1</sub> | 23685 <sub>+1</sub> | 21064 <sub>+1</sub> | 77895 <sub>+0</sub> | 65706 <sub>+0</sub> | 56287 <sub>+0</sub> | 46604 <sub>+0</sub> | 40747 <sub>+0</sub> |
| 15  | 32801 <sub>+1</sub> | 30578 <sub>+1</sub> | 27488 <sub>+1</sub> | 24996 <sub>+1</sub> | 22307 <sub>+1</sub> | 85468 <sub>+0</sub> | 72609 <sub>+0</sub> | 62621 <sub>+0</sub> | 52293 <sub>+0</sub> | 46009 <sub>+0</sub> |
| 16  | 34267 <sub>+1</sub> | 32000 <sub>+1</sub> | 28845 <sub>+1</sub> | 26296 <sub>+1</sub> | 23542 <sub>+1</sub> | 93122 <sub>+0</sub> | 79616 <sub>+0</sub> | 69077 <sub>+0</sub> | 58122 <sub>+0</sub> | 51422 <sub>+0</sub> |
| 17  | 35718 <sub>+1</sub> | 33409 <sub>+1</sub> | 30191 <sub>+1</sub> | 27587 <sub>+1</sub> | 24769 <sub>+1</sub> | 10085 <sub>+1</sub> | 86718 <sub>+0</sub> | 75642 <sub>+0</sub> | 64078 <sub>+0</sub> | 56972 <sub>+0</sub> |
| 18  | 37156 <sub>+1</sub> | 34805 <sub>+1</sub> | 31526 <sub>+1</sub> | 28869 <sub>+1</sub> | 25989 <sub>+1</sub> | 10865 <sub>+1</sub> | 93905 <sub>+0</sub> | 82307 <sub>+0</sub> | 70149 <sub>+0</sub> | 62648 <sub>+0</sub> |
| 19  | 38582 <sub>+1</sub> | 36191 <sub>+1</sub> | 32852 <sub>+1</sub> | 30144 <sub>+1</sub> | 27204 <sub>+1</sub> | 11651 <sub>+1</sub> | 10117 <sub>+1</sub> | 89065 <sub>+0</sub> | 76327 <sub>+0</sub> | 68440 <sub>+0</sub> |
| 20  | 39997 <sub>+1</sub> | 37566 <sub>+1</sub> | 34170 <sub>+1</sub> | 31410 <sub>+1</sub> | 28412 <sub>+1</sub> | 12443 <sub>+1</sub> | 10851 <sub>+1</sub> | 95908 <sub>+0</sub> | 82604 <sub>+0</sub> | 74338 <sub>+0</sub> |
| 21  | 41401 <sub>+1</sub> | 38932 <sub>+1</sub> | 35479 <sub>+1</sub> | 32671 <sub>+1</sub> | 29615 <sub>+1</sub> | 13240 <sub>+1</sub> | 11591 <sub>+1</sub> | 10283 <sub>+1</sub> | 88972 <sub>+0</sub> | 80337 <sub>+0</sub> |
| 22  | 42796 <sub>+1</sub> | 40289 <sub>+1</sub> | 36781 <sub>+1</sub> | 33924 <sub>+1</sub> | 30813 <sub>+1</sub> | 14041 <sub>+1</sub> | 12338 <sub>+1</sub> | 10982 <sub>+1</sub> | 95425 <sub>+0</sub> | 86427 <sub>+0</sub> |
| 23  | 44181 <sub>+1</sub> | 41638 <sub>+1</sub> | 38076 <sub>+1</sub> | 35172 <sub>+1</sub> | 32007 <sub>+1</sub> | 14848 <sub>+1</sub> | 13091 <sub>+1</sub> | 11689 <sub>+1</sub> | 10196 <sub>+1</sub> | 92604 <sub>+0</sub> |
| 24  | 45559 <sub>+1</sub> | 42980 <sub>+1</sub> | 39364 <sub>+1</sub> | 36415 <sub>+1</sub> | 33196 <sub>+1</sub> | 15659 <sub>+1</sub> | 13848 <sub>+1</sub> | 12401 <sub>+1</sub> | 10856 <sub>+1</sub> | 98862 <sub>+0</sub> |
| 25  | 46928 <sub>+1</sub> | 44314 <sub>+1</sub> | 40646 <sub>+1</sub> | 37652 <sub>+1</sub> | 34382 <sub>+1</sub> | 16473 <sub>+1</sub> | 14611 <sub>+1</sub> | 13120 <sub>+1</sub> | 11524 <sub>+1</sub> | 10520 <sub>+1</sub> |
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| 28  | 50993 <sub>+1</sub> | 48278 <sub>+1</sub> | 44461 <sub>+1</sub> | 41337 <sub>+1</sub> | 37916 <sub>+1</sub> | 18939 <sub>+1</sub> | 16928 <sub>+1</sub> | 15308 <sub>+1</sub> | 13565 <sub>+1</sub> | 12461 <sub>+1</sub> |
| 29  | 52336 <sub>+1</sub> | 49588 <sub>+1</sub> | 45722 <sub>+1</sub> | 42557 <sub>+1</sub> | 39087 <sub>+1</sub> | 19768 <sub>+1</sub> | 17708 <sub>+1</sub> | 16047 <sub>+1</sub> | 14256 <sub>+1</sub> | 13121 <sub>+1</sub> |
| 30  | 53672 <sub>+1</sub> | 50892 <sub>+1</sub> | 46979 <sub>+1</sub> | 43773 <sub>+1</sub> | 40256 <sub>+1</sub> | 20599 <sub>+1</sub> | 18493 <sub>+1</sub> | 16791 <sub>+1</sub> | 14953 <sub>+1</sub> | 13787 <sub>+1</sub> |
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| 32  | 56328 <sub>+1</sub> | 53486 <sub>+1</sub> | 49480 <sub>+1</sub> | 46194 <sub>+1</sub> | 42585 <sub>+1</sub> | 22271 <sub>+1</sub> | 20072 <sub>+1</sub> | 18291 <sub>+1</sub> | 16362 <sub>+1</sub> | 15134 <sub>+1</sub> |
| 33  | 57648 <sub>+1</sub> | 54776 <sub>+1</sub> | 50725 <sub>+1</sub> | 47400 <sub>+1</sub> | 43745 <sub>+1</sub> | 23110 <sub>+1</sub> | 20867 <sub>+1</sub> | 19047 <sub>+1</sub> | 17074 <sub>+1</sub> | 15815 <sub>+1</sub> |
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| 35  | 60275 <sub>+1</sub> | 57342 <sub>+1</sub> | 53203 <sub>+1</sub> | 49802 <sub>+1</sub> | 46059 <sub>+1</sub> | 24797 <sub>+1</sub> | 22465 <sub>+1</sub> | 20569 <sub>+1</sub> | 18509 <sub>+1</sub> | 17192 <sub>+1</sub> |
| 36  | 61581 <sub>+1</sub> | 58619 <sub>+1</sub> | 54437 <sub>+1</sub> | 50998 <sub>+1</sub> | 47212 <sub>+1</sub> | 25643 <sub>+1</sub> | 23269 <sub>+1</sub> | 21336 <sub>+1</sub> | 19233 <sub>+1</sub> | 17887 <sub>+1</sub> |
| 37  | 62883 <sub>+1</sub> | 59893 <sub>+1</sub> | 55668 <sub>+1</sub> | 52192 <sub>+1</sub> | 48363 <sub>+1</sub> | 26492 <sub>+1</sub> | 24075 <sub>+1</sub> | 22106 <sub>+1</sub> | 19960 <sub>+1</sub> | 18586 <sub>+1</sub> |
| 38  | 64181 <sub>+1</sub> | 61162 <sub>+1</sub> | 56896 <sub>+1</sub> | 53384 <sub>+1</sub> | 49513 <sub>+1</sub> | 27343 <sub>+1</sub> | 24884 <sub>+1</sub> | 22878 <sub>+1</sub> | 20691 <sub>+1</sub> | 19289 <sub>+1</sub> |
| 39  | 65476 <sub>+1</sub> | 62428 <sub>+1</sub> | 58120 <sub>+1</sub> | 54572 <sub>+1</sub> | 50660 <sub>+1</sub> | 28196 <sub>+1</sub> | 25695 <sub>+1</sub> | 23654 <sub>+1</sub> | 21426 <sub>+1</sub> | 19996 <sub>+1</sub> |
| 40  | 66766 <sub>+1</sub> | 63691 <sub>+1</sub> | 59342 <sub>+1</sub> | 55758 <sub>+1</sub> | 51805 <sub>+1</sub> | 29051 <sub>+1</sub> | 26509 <sub>+1</sub> | 24433 <sub>+1</sub> | 22164 <sub>+1</sub> | 20707 <sub>+1</sub> |

# 팩토리얼 표

| $n$ | $n!$   |
|-----|--|
| 1   | 1  |
| 2   | 2  |
| 3   | 6  |
| 4   | 24   |
| 5   | 120  |
| 6   | 720  |
| 7   | 5040   |
| 8   | 40320  |
| 9   | 3 62880  |
| 10  | 36 28800   |
| 11  | 399 16800  |
| 12  | 4790 01600   |
| 13  | 62270 20800  |
| 14  | 8 71782 91200  |
| 15  | 130 76743 68000  |
| 16  | 2092 27898 88000   |
| 17  | 35568 74280 96000  |
| 18  | 6 40237 37057 28000  |
| 19  | 121 64510 04088 32000  |
| 20  | 2432 90200 81766 40000   |
| 21  | 51090 94217 17094 40000  |
| 22  | 11 24000 72777 76076 80000   |
| 23  | 258 52016 73888 49766 40000  |
| 24  | 6204 48401 73323 94393 60000   |
| 25  | 1 55112 10043 33098 59840 00000                                      |
| 26  | 40 32914 61126 60563 55840 00000                                     |
| 27  | 1088 88694 50418 35216 07680 00000                                   |
| 28  | 30488 83446 11713 86050 15040 00000                                  |
| 29  | 8 84176 19937 39701 95454 36160 00000                                |
| 30  | 265 25285 98121 91058 63630 84800 00000                              |
| 31  | 8222 83865 41779 22817 72556 28800 00000                             |
| 32  | 2 63130 83693 36935 30167 21801 21600 00000                          |
| 33  | 86 83317 61881 18864 95518 19440 12800 00000                         |
| 34  | 2952 32799 03960 41408 47618 60964 35200 00000                       |
| 35  | 1 03331 47966 38614 49296 66651 33752 32000 00000                    |
| 36  | 37 19933 26789 90121 74679 99448 15083 52000 00000                   |
| 37  | 1376 37530 91226 34504 63159 79581 58090 24000 00000                 |
| 38  | 52302 26174 66601 11176 00072 24100 07429 12000 00000                |
| 39  | 20 39788 20811 97443 35864 02817 39902 89735 68000 00000             |
| 40  | 815 91528 32478 97734 34561 12695 96115 89427 20000 00000            |
| 41  | 33452 52661 31638 07108 17006 20534 40751 66515 20000 00000          |
| 42  | 14 05006 11775 28798 98543 14260 62445 11569 93638 40000 00000       |
| 43  | 604 15263 06337 38356 37355 13206 85139 97507 26451 20000 00000      |
| 44  | 26582 71574 78844 87680 43625 81101 46158 90319 63852 80000 00000    |
| 45  | 11 96222 20865 48019 45619 63161 49565 77150 64383 73376 00000 00000 |

# 소수의 목록

|      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2    | 3    | 5    | 7    | 11   | 13   | 17   | 19   | 23   | 29   | 31   | 37   | 41   | 43   |
| 47   | 53   | 59   | 61   | 67   | 71   | 73   | 79   | 83   | 89   | 97   | 101  | 103  | 107  |
| 109  | 113  | 127  | 131  | 137  | 139  | 149  | 151  | 157  | 163  | 167  | 173  | 179  | 181  |
| 191  | 193  | 197  | 199  | 211  | 223  | 227  | 229  | 233  | 239  | 241  | 251  | 257  | 263  |
| 269  | 271  | 277  | 281  | 283  | 293  | 307  | 311  | 313  | 317  | 331  | 337  | 347  | 349  |
| 353  | 359  | 367  | 373  | 379  | 383  | 389  | 397  | 401  | 409  | 419  | 421  | 431  | 433  |
| 439  | 443  | 449  | 457  | 461  | 463  | 467  | 479  | 487  | 491  | 499  | 503  | 509  | 521  |
| 523  | 541  | 547  | 557  | 563  | 569  | 571  | 577  | 587  | 593  | 599  | 601  | 607  | 613  |
| 617  | 619  | 631  | 641  | 643  | 647  | 653  | 659  | 661  | 673  | 677  | 683  | 691  | 701  |
| 709  | 719  | 727  | 733  | 739  | 743  | 751  | 757  | 761  | 769  | 773  | 787  | 797  | 809  |
| 811  | 821  | 823  | 827  | 829  | 839  | 853  | 857  | 859  | 863  | 877  | 881  | 883  | 887  |
| 907  | 911  | 919  | 929  | 937  | 941  | 947  | 953  | 967  | 971  | 977  | 983  | 991  | 997  |
| 1009 | 1013 | 1019 | 1021 | 1031 | 1033 | 1039 | 1049 | 1051 | 1061 | 1063 | 1069 | 1087 | 1091 |
| 1093 | 1097 | 1103 | 1109 | 1117 | 1123 | 1129 | 1151 | 1153 | 1163 | 1171 | 1181 | 1187 | 1193 |
| 1201 | 1213 | 1217 | 1223 | 1229 | 1231 | 1237 | 1249 | 1259 | 1277 | 1279 | 1283 | 1289 | 1291 |
| 1297 | 1301 | 1303 | 1307 | 1319 | 1321 | 1327 | 1361 | 1367 | 1373 | 1381 | 1399 | 1409 | 1423 |
| 1427 | 1429 | 1433 | 1439 | 1447 | 1451 | 1453 | 1459 | 1471 | 1481 | 1483 | 1487 | 1489 | 1493 |
| 1499 | 1511 | 1523 | 1531 | 1543 | 1549 | 1553 | 1559 | 1567 | 1571 | 1579 | 1583 | 1597 | 1601 |
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| 1709 | 1721 | 1723 | 1733 | 1741 | 1747 | 1753 | 1759 | 1777 | 1783 | 1787 | 1789 | 1801 | 1811 |
| 1823 | 1831 | 1847 | 1861 | 1867 | 1871 | 1873 | 1877 | 1879 | 1889 | 1901 | 1907 | 1913 | 1931 |
| 1933 | 1949 | 1951 | 1973 | 1979 | 1987 | 1993 | 1997 | 1999 | 2003 | 2011 | 2017 | 2027 | 2029 |
| 2039 | 2053 | 2063 | 2069 | 2081 | 2083 | 2087 | 2089 | 2099 | 2111 | 2113 | 2129 | 2131 | 2137 |
| 2141 | 2143 | 2153 | 2161 | 2179 | 2203 | 2207 | 2213 | 2221 | 2237 | 2239 | 2243 | 2251 | 2267 |
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| 2609 | 2617 | 2621 | 2633 | 2647 | 2657 | 2659 | 2663 | 2671 | 2677 | 2683 | 2687 | 2689 | 2693 |
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| 3037 | 3041 | 3049 | 3061 | 3067 | 3079 | 3083 | 3089 | 3109 | 3119 | 3121 | 3137 | 3163 | 3167 |
| 3169 | 3181 | 3187 | 3191 | 3203 | 3209 | 3217 | 3221 | 3229 | 3251 | 3253 | 3257 | 3259 | 3271 |
| 3299 | 3301 | 3307 | 3313 | 3319 | 3323 | 3329 | 3331 | 3343 | 3347 | 3359 | 3361 | 3371 | 3373 |
| 3389 | 3391 | 3407 | 3413 | 3433 | 3449 | 3457 | 3461 | 3463 | 3467 | 3469 | 3491 | 3499 | 3511 |
| 3517 | 3527 | 3529 | 3533 | 3539 | 3541 | 3547 | 3557 | 3559 | 3571 | 3581 | 3583 | 3593 | 3607 |
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| 3847 | 3851 | 3853 | 3863 | 3877 | 3881 | 3889 | 3907 | 3911 | 3917 | 3919 | 3923 | 3929 | 3931 |
| 3943 | 3947 | 3967 | 3989 | 4001 | 4003 | 4007 | 4013 | 4019 | 4021 | 4027 | 4049 | 4051 | 4057 |
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|       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 5153  | 5167  | 5171  | 5179  | 5189  | 5197  | 5209  | 5227  | 5231  | 5233  | 5237  | 5261  | 5273  | 5279  |
| 5281  | 5297  | 5303  | 5309  | 5323  | 5333  | 5347  | 5351  | 5381  | 5387  | 5393  | 5399  | 5407  | 5413  |
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| 5651  | 5653  | 5657  | 5659  | 5669  | 5683  | 5689  | 5693  | 5701  | 5711  | 5717  | 5737  | 5741  | 5743  |
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| 6737  | 6761  | 6763  | 6779  | 6781  | 6791  | 6793  | 6803  | 6823  | 6827  | 6829  | 6833  | 6841  | 6857  |
| 6863  | 6869  | 6871  | 6883  | 6899  | 6907  | 6911  | 6917  | 6947  | 6949  | 6959  | 6961  | 6967  | 6971  |
| 6977  | 6983  | 6991  | 6997  | 7001  | 7013  | 7019  | 7027  | 7039  | 7043  | 7057  | 7069  | 7079  | 7103  |
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| 8269  | 8273  | 8287  | 8291  | 8293  | 8297  | 8311  | 8317  | 8329  | 8353  | 8363  | 8369  | 8377  | 8387  |
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| 8887  | 8893  | 8923  | 8929  | 8933  | 8941  | 8951  | 8963  | 8969  | 8971  | 8999  | 9001  | 9007  | 9011  |
| 9013  | 9029  | 9041  | 9043  | 9049  | 9059  | 9067  | 9091  | 9103  | 9109  | 9127  | 9133  | 9137  | 9151  |
| 9157  | 9161  | 9173  | 9181  | 9187  | 9199  | 9203  | 9209  | 9221  | 9227  | 9239  | 9241  | 9257  | 9277  |
| 9281  | 9283  | 9293  | 9311  | 9319  | 9323  | 9337  | 9341  | 9343  | 9349  | 9371  | 9377  | 9391  | 9397  |
| 9403  | 9413  | 9419  | 9421  | 9431  | 9433  | 9437  | 9439  | 9461  | 9463  | 9467  | 9473  | 9479  | 9491  |
| 9497  | 9511  | 9521  | 9533  | 9539  | 9547  | 9551  | 9587  | 9601  | 9613  | 9619  | 9623  | 9629  | 9631  |
| 9643  | 9649  | 9661  | 9677  | 9679  | 9689  | 9697  | 9719  | 9721  | 9733  | 9739  | 9743  | 9749  | 9767  |
| 9769  | 9781  | 9787  | 9791  | 9803  | 9811  | 9817  | 9829  | 9833  | 9839  | 9851  | 9857  | 9859  | 9871  |
| 9883  | 9887  | 9901  | 9907  | 9923  | 9929  | 9931  | 9941  | 9949  | 9967  | 9973  | 10007 | 10009 | 10037 |
| 10039 | 10061 | 10067 | 10069 | 10079 | 10091 | 10093 | 10099 | 10103 | 10111 | 10133 | 10139 | 10141 | 10151 |
| 10159 | 10163 | 10169 | 10177 | 10181 | 10193 | 10211 | 10223 | 10243 | 10247 | 10253 | 10259 | 10267 | 10271 |