# INLIGTINGSBOEKIE

## Algebra

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$|x| = \begin{cases} x & \text{as} \quad x \geq 0 \\ -x & \text{as} \quad x < 0 \end{cases}$$

$$\sum_{i=1}^{n} 1 = n$$

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2} = \frac{n^2}{2} + \frac{n}{2}$$

$$\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6} = \frac{n^3}{3} + \frac{n^2}{2} + \frac{n}{6}$$

$$\sum_{i=1}^{n} i^3 = \frac{n^2(n+1)^2}{4} = \frac{n^4}{4} + \frac{n^3}{2} + \frac{n^2}{4}$$

$$z = a + bi \qquad z^* = a - bi$$

$$\ln A + \ln B = \ln (AB) \qquad \ln A - \ln B = \ln\left(\frac{A}{B}\right)$$

$$\ln A^n = n \ln A \qquad \log_a x = \frac{\log_b x}{\log_b a}$$

## Calculus

$$\text{Oppervlakte} = \lim_{n \to \infty} \left(\frac{b-a}{n}\right) \sum_{i=1}^{n} f(x_i) \qquad \int_a^b x^n dx = \left[\frac{x^{n+1}}{n+1}\right]_a^b$$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} \qquad \frac{dy}{dx} = \frac{dy}{dt} \times \frac{dt}{dx}$$

$$\int f'(g(x)).g'(x)\,dx = f(g(x)) + C$$

$$\int f(x).g'(x)\,dx = f(x).g(x) - \int g(x).f'(x)\,dx + C$$

$$x_{r+1} = x_r - \frac{f(x_r)}{f'(x_r)} \qquad V = \pi \int_a^b y^2 dx$$

| **Funksie** | **Afgeleide** |
|---|---|
| $x^n$ | $nx^{n-1}$ |
| $\sin x$ | $\cos x$ |
| $\cos x$ | $-\sin x$ |
| $\tan x$ | $\sec^2 x$ |
| $\cot x$ | $-\text{cosec}^2 x$ |
| $\sec x$ | $\sec x.\tan x$ |
| $\text{cosec}\, x$ | $-\text{cosec}\, x.\cot x$ |
| $f(g(x))$ | $f'(g(x)).g'(x)$ |
| $f(x).g(x)$ | $g(x).f'(x)+f(x).g'(x)$ |
| $\frac{f(x)}{g(x)}$ | $\frac{g(x).f'(x)-f(x).g'(x)}{[g(x)]^2}$ |

$A=\frac{1}{2}r^2\theta$ $\quad$ $s=r\theta$

In $\triangle$ABC: $\quad$ $\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$

$a^2=b^2+c^2-2bc.\cos A$

$\text{Oppervlakte}=\frac{1}{2}ab.\sin C$

$\sin^2 A+\cos^2 A=1$ $\quad$ $1+\tan^2 A=\sec^2 A$ $\quad$ $1+\cot^2 A=\text{cosec}^2 A$

$\sin(A\pm B)=\sin A.\cos B\pm\cos A\sin B$ $\quad$ $\cos(A\pm B)=\cos A\cos B\mp\sin A\sin B$

$\sin 2A=2\sin A\cos A$ $\quad$ $\cos 2A=\begin{cases}\cos^2 A-\sin^2 A\\ 2\cos^2 A-1\\ 1-2\sin^2 A\end{cases}$

$\sin A.\cos B=\frac{1}{2}[\sin(A+B)+\sin(A-B)]$

$\sin A.\sin B=\frac{1}{2}[\cos(A-B)-\cos(A+B)]$

$\cos A.\cos B=\frac{1}{2}[\cos(A-B)+\cos(A+B)]$

## Finansies & Modellering

$$F = P(1+in) \qquad F = P(1-in) \qquad F = P(1+i)^n \qquad F = P(1-i)^n$$

$$F = x\left[\frac{(1+i)^n - 1}{i}\right] \qquad P = x\left[\frac{1-(1+i)^{-n}}{i}\right] \qquad r_{eff} = \left(1+\frac{r}{k}\right)^k - 1$$

$$P_{n+1} = P_n + rP_n\left(1-\frac{P_n}{K}\right)$$

$$R_{n+1} = R_n + aR_n\left(1-\frac{R_n}{K}\right) - bR_nF_n \qquad F_{n+1} = F_n + f\,bR_nF_n - cF_n$$

## Statistiek

$$P(A) = \frac{n(A)}{n(S)} \qquad P(B \mid A) = \frac{P(B \cap A)}{P(A)} \qquad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$${}^nP_r = \frac{n!}{(n-r)!} \qquad {}^nC_r = \binom{n}{r} = \frac{n!}{(n-r)!r!} \qquad P(X = x) = \binom{n}{x}p^x(1-p)^{n-x}$$

$$P(R = r) = \frac{\binom{p}{r}\binom{N-p}{n-r}}{\binom{N}{n}} \qquad z = \frac{X-\mu}{\sigma} \qquad z = \frac{\bar{x}-\mu}{\frac{\sigma}{\sqrt{n}}}$$

$$z = \frac{\bar{x}-\bar{y}}{\sqrt{\frac{\sigma_x^2}{n_x}+\frac{\sigma_y^2}{n_y}}} \qquad b = \frac{n\sum(xy) - \sum x\sum y}{n(\sum x^2) - (\sum x)^2} \qquad b = \frac{\sum xy - n\bar{x}\bar{y}}{\sum x^2 - n(\bar{x})^2} \qquad b = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sum(x-\bar{x})^2}$$

$$\bar{x} \pm z\frac{\sigma}{\sqrt{n}} \qquad p \pm z\sqrt{\frac{p(1-p)}{n}}$$

## Matrikstransformasies

$$\begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix} \qquad \begin{pmatrix} \cos 2\theta & \sin 2\theta \\ \sin 2\theta & -\cos 2\theta \end{pmatrix}$$

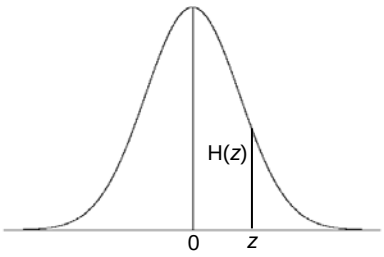
 

# Normaalverdelingstabel

Oppervlaktes onder die Normaalkromme

$$H(z) = \frac{1}{\sqrt{2\pi}} \int_0^z e^{-\frac{1}{2}x^2}\, dx$$

$H(-z) = H(z)$, $H(\infty) = \frac{1}{2}$




Inskrywings in die tabel is waardes van $H(z)$ vir $z \geq 0$.

| $z$ | ,00 | ,01 | ,02 | ,03 | ,04 | ,05 | ,06 | ,07 | ,08 | ,09 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,0 | ,0000 | ,0040 | ,0080 | ,0120 | ,0160 | ,0199 | ,0239 | ,0279 | ,0319 | ,0359 |
| 0,1 | ,0398 | ,0438 | ,0478 | ,0517 | ,0557 | ,0596 | ,0636 | ,0675 | ,0714 | ,0753 |
| 0,2 | ,0793 | ,0832 | ,0871 | ,0910 | ,0948 | ,0987 | ,1026 | ,1064 | ,1103 | ,1141 |
| 0,3 | ,1179 | ,1217 | ,1255 | ,1293 | ,1331 | ,1368 | ,1406 | ,1443 | ,1480 | ,1517 |
| 0,4 | ,1554 | ,1591 | ,1628 | ,1664 | ,1700 | ,1736 | ,1772 | ,1808 | ,1844 | ,1879 |
| 0,5 | ,1915 | ,1950 | ,1985 | ,2019 | ,2054 | ,2088 | ,2123 | ,2157 | ,2190 | ,2224 |
| 0,6 | ,2257 | ,2291 | ,2324 | ,2357 | ,2389 | ,2422 | ,2454 | ,2486 | ,2517 | ,2549 |
| 0,7 | ,2580 | ,2611 | ,2642 | ,2673 | ,2704 | ,2734 | ,2764 | ,2794 | ,2823 | ,2852 |
| 0,8 | ,2881 | ,2910 | ,2939 | ,2967 | ,2995 | ,3023 | ,3051 | ,3078 | ,3106 | ,3133 |
| 0,9 | ,3159 | ,3186 | ,3212 | ,3238 | ,3264 | ,3289 | ,3315 | ,3340 | ,3365 | ,3389 |
| 1,0 | ,3413 | ,3438 | ,3461 | ,3485 | ,3508 | ,3531 | ,3554 | ,3577 | ,3599 | ,3621 |
| 1,1 | ,3643 | ,3665 | ,3686 | ,3708 | ,3729 | ,3749 | ,3770 | ,3790 | ,3810 | ,3830 |
| 1,2 | ,3849 | ,3869 | ,3888 | ,3907 | ,3925 | ,3944 | ,3962 | ,3980 | ,3997 | ,4015 |
| 1,3 | ,4032 | ,4049 | ,4066 | ,4082 | ,4099 | ,4115 | ,4131 | ,4147 | ,4162 | ,4177 |
| 1,4 | ,4192 | ,4207 | ,4222 | ,4236 | ,4251 | ,4265 | ,4279 | ,4292 | ,4306 | ,4319 |
| 1,5 | ,4332 | ,4345 | ,4357 | ,4370 | ,4382 | ,4394 | ,4406 | ,4418 | ,4429 | ,4441 |
| 1,6 | ,4452 | ,4463 | ,4474 | ,4484 | ,4495 | ,4505 | ,4515 | ,4525 | ,4535 | ,4545 |
| 1,7 | ,4554 | ,4564 | ,4573 | ,4582 | ,4591 | ,4599 | ,4608 | ,4616 | ,4625 | ,4633 |
| 1,8 | ,4641 | ,4649 | ,4656 | ,4664 | ,4671 | ,4678 | ,4686 | ,4693 | ,4699 | ,4706 |
| 1,9 | ,4713 | ,4719 | ,4726 | ,4732 | ,4738 | ,4744 | ,4750 | ,4756 | ,4761 | ,4767 |
| 2,0 | ,4772 | ,4778 | ,4783 | ,4788 | ,4793 | ,4798 | ,4803 | ,4808 | ,4812 | ,4817 |
| 2,1 | ,4821 | ,4826 | ,4830 | ,4834 | ,4838 | ,4842 | ,4846 | ,4850 | ,4854 | ,4857 |
| 2,2 | ,4861 | ,4864 | ,4868 | ,4871 | ,4875 | ,4878 | ,4881 | ,4884 | ,4887 | ,4890 |
| 2,3 | ,48928 | ,48956 | ,48983 | ,49010 | ,49036 | ,49061 | ,49086 | ,49111 | ,49134 | ,49158 |
| 2,4 | ,49180 | ,49202 | ,49224 | ,49245 | ,49266 | ,49286 | ,49305 | ,49324 | ,49343 | ,49361 |
| 2,5 | ,49379 | ,49396 | ,49413 | ,49430 | ,49446 | ,49461 | ,49477 | ,49492 | ,49506 | ,49520 |
| 2,6 | ,49534 | ,49547 | ,49560 | ,49573 | ,49585 | ,49598 | ,49609 | ,49621 | ,49632 | ,49643 |
| 2,7 | ,49653 | ,49664 | ,49674 | ,49683 | ,49693 | ,49702 | ,49711 | ,49720 | ,49728 | ,49736 |
| 2,8 | ,49744 | ,49752 | ,49760 | ,49767 | ,49774 | ,49781 | ,49788 | ,49795 | ,49801 | ,49807 |
| 2,9 | ,49813 | ,49819 | ,49825 | ,49831 | ,49836 | ,49841 | ,49846 | ,49851 | ,49856 | ,49861 |
| 3,0 | ,49865 | ,49869 | ,49874 | ,49878 | ,49882 | ,49886 | ,49889 | ,49893 | ,49896 | ,49900 |
| 3,1 | ,49903 | ,49906 | ,49910 | ,49913 | ,49916 | ,49918 | ,49921 | ,49924 | ,49926 | ,49929 |
| 3,2 | ,49931 | ,49934 | ,49936 | ,49938 | ,49940 | ,49942 | ,49944 | ,49946 | ,49948 | ,49950 |
| 3,3 | ,49952 | ,49953 | ,49955 | ,49957 | ,49958 | ,49960 | ,49961 | ,49962 | ,49964 | ,49965 |
| 3,4 | ,49966 | ,49968 | ,49969 | ,49970 | ,49971 | ,49972 | ,49973 | ,49974 | ,49975 | ,49976 |
| 3,5 | ,49977 | | | | | | | | | |
| 3,6 | ,49984 | | | | | | | | | |
| 3,7 | ,49989 | | | | | | | | | |
| 3,8 | ,49993 | | | | | | | | | |
| 3,9 | ,49995 | | | | | | | | | |
| 4,0 | ,49997 | | | | | | | | | |