

## TULETISTE TABEL

| Funktsioon                  | Tuletis                      | Näide  |
|-----------------------------|------------------------------|--|
| $y=c$                       | $y'=0$                       | $(5)'=0$   |
| $y=x$                       | $y'=1$                       | $(5x)'=5$  |
| $y=\frac{1}{x}$             | $y'=-\frac{1}{x^2}$          | $\left(\frac{5}{x}\right)'=-\frac{5}{x^2}$             |
| $y=\sqrt{x}$                | $y'=\frac{1}{2\sqrt{x}}$     | $(5\sqrt{x})'=\frac{5}{2\sqrt{x}}$                     |
| $y=x^n$                     | $y'=nx^{n-1}$                | $(x^5)'=5x^4$  |
| $y=a^x$                     | $y'=a^x \ln a$               | $(5^x)'=5^x \ln 5$                                     |
| $y=e^x$                     | $y'=e^x$                     | $(5e^x)'=5e^x$   |
| $y=\log_a x$                | $y'=\frac{1}{x \ln a}$       | $(\log_5 x)'=\frac{1}{x \ln 5}$                        |
| $y=\ln x$                   | $y'=\frac{1}{x}$             | $(5 \ln x)'=\frac{5}{x}$                               |
| $y=\sin x$                  | $y'=\cos x$                  | $(5 \sin x)'=5 \cos x$                                 |
| $y=\cos x$                  | $y'=-\sin x$                 | $(5 \cos x)'=-5 \sin x$                                |
| $y=\tan x$                  | $y'=\frac{1}{\cos^2 x}$      | $(5 \tan x)'=\frac{5}{\cos^2 x}$                       |
| $y=\cot x$                  | $y'=-\frac{1}{\sin^2 x}$     | $(5 \cot x)'=-\frac{5}{\sin^2 x}$                      |
| $y=\arcsin x$               | $y'=\frac{1}{\sqrt{1-x^2}}$  | $(5 \arcsin x)'=\frac{5}{\sqrt{1-x^2}}$                |
| $y=\arccos x$               | $y'=-\frac{1}{\sqrt{1-x^2}}$ | $(5 \arccos x)'=-\frac{5}{\sqrt{1-x^2}}$               |
| $y=\arctan x$               | $y'=\frac{1}{\sqrt{1+x^2}}$  | $(5 \arctan x)'=\frac{5}{\sqrt{1+x^2}}$                |
| $y=\operatorname{arccot} x$ | $y'=-\frac{1}{\sqrt{1+x^2}}$ | $(5 \operatorname{arccot} x)'=-\frac{5}{\sqrt{1+x^2}}$ |

## TEHETE TULETISED

### 1. Arvuga korrutatud funktsiooni tuletis

$$[c \cdot f(x)]' = c \cdot f'(x)$$

Näide:

$$[5x^2]' = 5 \cdot (x^2)' = 5 \cdot 2x = 10x$$

### 2. Summa tuletis

$$[f(x) + g(x)]' = f'(x) + g'(x)$$

Näide:

$$(x+5)' = x' + 5' = 1 + 0 = 1$$

### 3. Vahe tuletis

$$[f(x) - g(x)]' = f'(x) - g'(x)$$

Näide:

$$(x^2 - x)' = (x^2)' - x' = 2x - 1$$

### 4. Korrutise tuletis

$$[f(x) \cdot g(x)]' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

Näide:

$$[x^2 \cdot e^x]' = (x^2)' \cdot e^x + x^2 \cdot (e^x)' = 2x e^x + x^2 e^x = x e^x (2+x)$$

### 5. Jagatise tuletis

$$\left[\frac{f(x)}{g(x)}\right]' = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{[g(x)]^2}$$

Näide:

$$\left(\frac{x^2}{x+1}\right)' = \frac{(x^2)' \cdot (x+1) - x^2 \cdot (x+1)'}{(x+1)^2} = \frac{2x(x+1) - x^2 \cdot 1}{(x+1)^2} = \frac{2x^2 + 2x - x^2}{(x+1)^2} = \frac{x^2 + 2x}{(x+1)^2}$$