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**سۆزۈم ۋە**

**ۋە ئىككىنچى ئۆزگىرىش قانۇنى**

45.  $\frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x)$   $\frac{d}{dx} \sin(x^2) = \cos(x^2) \cdot 2x = 2x \cos(x^2)$

46.  $\frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x)$   $\frac{d}{dx} \ln(x^2) = \frac{1}{x^2} \cdot 2x = \frac{2}{x}$

(أ)  $\frac{d}{dx} \sin(x) = \cos(x)$   $\frac{d}{dx} \cos(x) = -\sin(x)$   $\frac{d}{dx} \tan(x) = \sec^2(x)$   $\frac{d}{dx} \cot(x) = -\csc^2(x)$   $\frac{d}{dx} \sec(x) = \sec(x)\tan(x)$   $\frac{d}{dx} \csc(x) = -\csc(x)\cot(x)$

(ب)  $\frac{d}{dx} e^x = e^x$   $\frac{d}{dx} a^x = a^x \ln(a)$   $\frac{d}{dx} \ln(x) = \frac{1}{x}$   $\frac{d}{dx} \log_a(x) = \frac{1}{x \ln(a)}$

(1)  $\frac{d}{dx} x^n = nx^{n-1}$   $\frac{d}{dx} x^{-n} = -nx^{-n-1} = -\frac{n}{x^{n+1}}$

(2)  $\frac{d}{dx} \sqrt{x} = \frac{1}{2\sqrt{x}}$   $\frac{d}{dx} \sqrt[n]{x} = \frac{1}{n} x^{\frac{1}{n}-1} = \frac{1}{n} x^{\frac{1-n}{n}} = \frac{1}{n} \sqrt[n]{x^{1-n}}$

(3)  $\frac{d}{dx} \frac{1}{x} = -\frac{1}{x^2}$   $\frac{d}{dx} \frac{1}{x^2} = -\frac{2}{x^3}$   $\frac{d}{dx} \frac{1}{x^3} = -\frac{3}{x^4}$



























