

## Formulas for Derivatives

1.  $c' = 0$

2.  $x' = 1$

3.  $(x^n)' = nx^{n-1}$

4.  $(cf(x))' = cf'(x)$

5.  $(f(x) \pm g(x))' = f'(x) \pm g'(x)$

6.  $(f(x)g(x))' = f'(x)g(x) + f(x)g'(x)$

7.  $\left(\frac{f(x)}{g(x)}\right)' = \frac{f'(x)g(x) - f(x)g'(x)}{g(x)^2}$

8.  $(\sin(x))' = \cos(x)$

9.  $(\cos(x))' = -\sin(x)$

10.  $(\tan(x))' = \sec^2(x)$

11.  $(\cot(x))' = -\csc^2(x)$

12.  $(\sec(x))' = \sec(x)\tan(x)$

13.  $(\csc(x))' = -\csc(x)\cot(x)$

14.  $(e^x)' = e^x$

15.  $(\ln(x))' = \frac{1}{x}$

16.  $[f(g(x))]' = f'(g(x))g'(x)$

17.  $\frac{dy}{dx} = \frac{dy}{du} \frac{du}{dx}$

18.  $\forall r \in \mathbb{R}, \quad (x^r)' = rx^{r-1}$

19.  $(a^x)' = \ln(a)a^x$

20.  $(\log_a(x))' = \frac{1}{\ln(a)x}$

21.  $(\sin^{-1}(x))' = \frac{1}{\sqrt{1-x^2}}$

22.  $(\cos^{-1}(x))' = \frac{-1}{\sqrt{1-x^2}}$

23.  $(\tan^{-1}(x))' = \frac{1}{1+x^2}$

24.  $(\cot^{-1}(x))' = \frac{-1}{1+x^2}$

25.  $(\sec^{-1}(x))' = \frac{1}{|x|\sqrt{x^2-1}}$

26.  $(\csc^{-1}(x))' = \frac{-1}{|x|\sqrt{x^2-1}}$