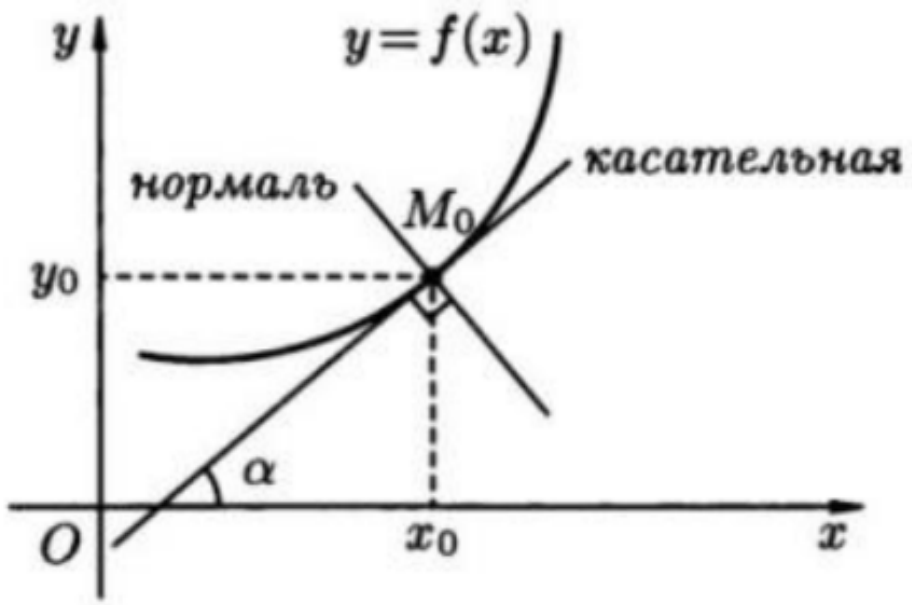
ТАБЛИЦА ПРОИЗВОДНЫХ

Основные формулы, используемые при решении задач по теме «Производные».

1. $c' = 0,\ c = \text{const}$
2. $\left(x^n\right)' = nx^{n-1}$
3. $\left(a^x\right)' = a^x \cdot \ln a$
4. $\left(e^x\right)' = e^x$
5. $\left(\log_a x\right)' = \dfrac{1}{x \ln a}$
6. $\left(\ln x\right)' = \dfrac{1}{x}$
7. $\left(\sin x\right)' = \cos x$
8. $\left(\cos x\right)' = -\sin x$
9. $\left(\sqrt{x}\right)' = \dfrac{1}{2\sqrt{x}}$
10. $\left(\text{tg}x\right)' = \dfrac{1}{\cos^2 x}$
11. $\left(\text{ctg}x\right)' = -\dfrac{1}{\sin^2 x}$
12. $\left(\arcsin x\right)' = \dfrac{1}{\sqrt{1-x^2}}$
13. $\left(\arccos x\right)' = -\dfrac{1}{\sqrt{1-x^2}}$
14. $\left(\text{arctg}x\right)' = \dfrac{1}{1+x^2}$
15. $\left(\text{arcctg}x\right)' = -\dfrac{1}{1+x^2}$
16. $\left(\text{sh}\, x\right)' = \text{ch}\, x$
17. $\left(\text{ch}\, x\right)' = \text{sh}\, x$
18. $\left(\text{th}\, x\right)' = \dfrac{1}{\text{ch}^2 x}$
19. $\left(\text{cth}\, x\right)' = -\dfrac{1}{\text{sh}^2 x}$

Основные формулы



$(u+v)' = u' + v'$
$(u-v)' = u' - v'$
$(u*v)' = u'v + v'u$
$(u/v)' = (u'v + v'u)/(v*v)$

$$\lim_{x \to x_0} \frac{f(x)}{g(x)} = \lim_{x \to x_0} \frac{f'(x)}{g'(x)}.$$

Дополнительные формулы

$(\ln y)' = y'/y$
$(u\text{^}v)' = u\text{^}v * v' * \ln(u) + u\text{^}(v-1) * u' * v$
$y''(x) = (y''(t) * x'(t) - x''(t) * y'(t))/(x'(t))\text{^}3$
$df(u) = f'(u)du$

1. $dC = 0$, где C — константа.
2. $d(\alpha u) = \alpha \cdot du$, где α — константа.
3. $d(u \pm v) = du \pm dv$.
4. $d(u \cdot v) = udv + vdu$.
5. $d\left(\frac{u}{v}\right) = \frac{vdu - udv}{v^2}$, где $v(x) \neq 0$.