

Test
Review

① Find $\frac{dy}{dx}$ $2xy^2 + 3y - 4x - 5 = 6x^2 + 2y^3 - 3$

② $f(x) = 3x \cot^{-1}(5x)$

find $f'(x)$

③ $y = e^{4x} \sin(2x)$ $y'' =$

④ $h(x) = \frac{\ln(4x^3)}{2x}$ $h'(x) =$

⑤ $f(x) = \frac{2x^3 - 3}{5}$ $f^{-1}(x) = ?$

$\frac{d f^{-1}(x)}{dx} =$

⑥ $y = 4^{x^3} \cos(3x)$ $y' =$

⑦ Write the equation of the normal line to $f(x) = 4x^3 - 3x^2 + 5$ at $x = -1$

⑧ $y = 2x - 3$ $y'(5) =$

$$(9) \quad y = \frac{2x-3}{e^{2x}} \quad y' =$$

$$(10) \quad \text{find } \frac{d^2y}{dx^2} \quad 2x^3 - 3y = 5y^2 + 3x - 5$$

$$(11) \quad \lim_{h \rightarrow 0} \frac{4(5+h)^2 + 5 - 4(5)^2 - 5}{h}$$

$$(12) \quad f(x) = \frac{\sqrt[3]{x} - \sqrt{x}}{\sqrt{x}} \quad f'(x) =$$

$$(13) \quad y = \sec(2x)\sqrt{4x-3} \quad y' =$$

(14) Air is being pumped into a spherical balloon at the rate of 7 cubic cm/sec. What is the rate of change of the radius at the instant the volume is 36π ? $V = \frac{4}{3}\pi r^3$

(15) A Kite is flying at an angle of elevation of $\frac{\pi}{3}$. The Kite string is being taken in at a rate of 1 ft/sec. If the angle of elevation does not change, how fast is the Kite losing altitude?