

Answers to omg i cant even (derive this)

- 1) $\frac{dy}{dx} = -\frac{1}{2x^2 - 4x + 2}$ 2) $\frac{dy}{dx} = -6x + 3$ 3) $f'(x) = 10x - 3$ 4) $\frac{dy}{dx} = 6x - 1$
- 5) $\frac{dy}{dx} = -\frac{9}{5x^4}$ 6) $f'(x) = \frac{\frac{1}{2}}{5x^3} + \frac{4}{2x^2}$ 7) $f'(x) = 3x + \frac{3}{2x^4}$
- 8) $f'(x) = -\frac{4}{x^2} - \frac{3}{2x^3} - \frac{8}{x^5}$
- 9) $\begin{aligned} \frac{dy}{dx} &= (-3x^4 - 4)(15x^4 + 15x^2) + (3x^5 + 5x^3 - 4) \cdot -12x^3 \\ &= -81x^8 - 105x^6 - 60x^4 + 48x^3 - 60x^2 \end{aligned}$
- 10) $\begin{aligned} f'(x) &= (-x^4 + 1) \cdot -6x - 3x^2 \cdot -4x^3 \\ &= 18x^5 - 6x \end{aligned}$
- 11) $\begin{aligned} f'(x) &= -3x^5 \cdot -3x^2 + (-x^3 + 4) \cdot -15x^4 \\ &= 24x^7 - 60x^4 \end{aligned}$
- 12) $\begin{aligned} \frac{dy}{dx} &= \frac{(4x^4 - 3) \cdot 12x^2 - (4x^3 + 3) \cdot 16x^3}{(4x^4 - 3)^2} \\ &= \frac{-16x^6 - 48x^3 - 36x^2}{16x^8 - 24x^4 + 9} \end{aligned}$
- 13) $\begin{aligned} f'(x) &= \frac{(x^5 - 5)(5x^4 - 15x^2) - (x^5 - 5x^3) \cdot 5x^4}{(x^5 - 5)^2} \\ &= \frac{10x^7 - 25x^4 + 75x^2}{x^{10} - 10x^5 + 25} \end{aligned}$
- 14) $\frac{dy}{dx} = 5(2x + 3)^4 \cdot 2$ 15) $\begin{aligned} f'(x) &= 4(-3x^2 - 2)^3 \cdot -6x \\ &= -24x(-3x^2 - 2)^3 \\ &= 10(2x + 3)^4 \end{aligned}$
- 16) $\begin{aligned} \frac{dy}{dx} &= (2x + 1) \cdot -2(x^4 + 1)^{-3} \cdot 4x^3 + (x^4 + 1)^{-2} \cdot 2 \\ &= \frac{2(-7x^4 - 4x^3 + 1)}{(x^4 + 1)^3} \end{aligned}$
- 17) $\begin{aligned} f'(x) &= 4(-2x^3 - 3)^3 \cdot -6x^2 \\ &= -24x^2(-2x^3 - 3)^3 \end{aligned}$
- 18) $\begin{aligned} \frac{dy}{dx} &= 5(x^2 - 2)^4 \cdot 2x \\ &= 10x(x^2 - 2)^4 \end{aligned}$
- 19) $\begin{aligned} \frac{dy}{dx} &= (-x^4 - 3) \cdot -2(5x - 1)^{-3} \cdot 5 + (5x - 1)^{-2} \cdot -4x^3 \\ &= \frac{2(-5x^4 + 15 + 2x^3)}{(5x - 1)^3} \end{aligned}$
- 20) $\begin{aligned} f'(x) &= \sec 2x^4 \cdot \tan 2x^4 \cdot 8x^3 \\ &= 8x^3 \sec 2x^4 \cdot \tan 2x^4 \end{aligned}$
- 21) $\begin{aligned} \frac{dy}{dx} &= -\sin 4x^2 \cdot 8x \\ &= -8x \sin 4x^2 \end{aligned}$
- 22) $\begin{aligned} f'(x) &= -\csc 4x^2 \cot 4x^2 \cdot 8x \\ &= -8x \csc 4x^2 \cdot \cot 4x^2 \end{aligned}$
- 23) $\begin{aligned} \frac{dy}{dx} &= -\csc^2 2x^3 \cdot 6x^2 \\ &= -6x^2 \cdot \csc^2 2x^3 \end{aligned}$
- 24) $\begin{aligned} \frac{dy}{dx} &= \cos 5x^5 \cdot 25x^4 \\ &= 25x^4 \cos 5x^5 \end{aligned}$
- 25) $\begin{aligned} \frac{dy}{dx} &= -\sin 3x^4 \cdot 12x^3 \\ &= -12x^3 \sin 3x^4 \end{aligned}$
- 26) $\begin{aligned} f'(x) &= \frac{1}{4x^3} \cdot 12x^2 \\ &= \frac{3}{x} \end{aligned}$

$$27) \frac{dy}{dx} = e^{4x^3} \cdot 12x^2$$

$$28) f'(x) = e^{2x^5} \cdot 10x^4$$

$$29) \frac{dy}{dx} = \frac{1}{x^5} \cdot 5x^4$$
$$= \frac{5}{x}$$

$$30) h_1'(2) = -\frac{5}{2}$$
$$h_2'(1) = -\frac{1}{8}$$
$$h_3'(3) = 4$$
$$h_4'(1) = -2$$