

3-10-14

Derivatives

$$\textcircled{1} f(x) = x^3 + 3x^2 + 10x^0$$

$$f'(x) = 3x^2 + 6x$$

$$\textcircled{2} f(x) = 2x^4 + 6x^1 + 1$$

$$f'(x) = 8x^3 + 6$$

$$\textcircled{3} f(x) = -8x^2 - 6x^1 - 12$$

$$f'(x) = -16x - 6$$

$$\textcircled{4} f(x) = x^{-4} + 2x^{-1}$$

$$f'(x) = -4x^{-5} - 2x^{-2}$$

$$= \frac{-4}{x^5} - \frac{2}{x^2}$$

$$\begin{aligned} \textcircled{5} \quad f(x) &= \frac{6}{x^3} + \frac{2}{x^2} \\ &= 6x^{-3} + 2x^{-2} \\ f'(x) &= -18x^{-4} - 4x^{-3} \\ &= \frac{-18}{x^4} - \frac{4}{x^3} \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad f(x) &= \frac{5}{x^4} - \frac{2}{x^3} + 10 \\ &= 5x^{-4} - 2x^{-3} + 10 \\ f'(x) &= -20x^{-5} + 6x^{-4} \\ &= \frac{-20}{x^5} + \frac{6}{x^4} \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad f(x) &= \frac{1}{2} x^6 \\ f'(x) &= 3x^5 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad f(x) &= \frac{x^4}{4} \\ &= \frac{1}{4} x^4 \\ f'(x) &= 1x^3 \\ &= x^3 \end{aligned} \quad \frac{1}{4} \cdot 4 = \frac{4}{4} = 1$$

$$\begin{aligned} \textcircled{9} \quad f(x) &= \frac{2}{3} x^6 \\ f'(x) &= 4x^5 \end{aligned} \quad \frac{1}{3} \cdot 6 = \frac{6}{3} = 2$$

$$\begin{aligned} \textcircled{10} \quad f(x) &= \frac{4}{5} x^5 \\ f'(x) &= 4x^4 \end{aligned} \quad \frac{1}{5} \cdot 4 = \frac{4}{5}$$

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4th Trig

Derivatives

$$\textcircled{1} f(x) = 6x^3 + 2x^2 + 5x + 8$$
$$f'(x) = 18x^2 + 4x + 5$$

$$\textcircled{2} f(x) = 2x^{10} + x^4 + 80$$
$$f'(x) = 20x^9 + 4x^3$$

$$\textcircled{3} f(x) = x^4 + x^3 + 2x^2 + 8x$$
$$f'(x) = 4x^3 + 3x^2 + 4x + 8$$

$$\textcircled{4} f(x) = x^{-5} - x^{-2}$$
$$f'(x) = -5x^{-6} + 2x^{-3}$$
$$= \frac{-5}{x^6} + \frac{2}{x^3}$$

$$\textcircled{5} \quad f(x) = -2x^{-4} - 6x^{-10}$$

$$f'(x) = 8x^{-5} + 60x^{-11}$$

$$= \frac{8}{x^5} + \frac{60}{x^{11}}$$

$$\textcircled{6} \quad f(x) = \frac{5}{x^5} + \frac{2}{x^2}$$

$$= 5x^{-5} + 2x^{-2}$$

$$f'(x) = -25x^{-6} - 4x^{-3}$$

$$= \frac{-25}{x^6} - \frac{4}{x^3}$$

$$\textcircled{7} \quad f(x) = \frac{1}{2}x^6$$

$$f'(x) = 3x^5$$

$$\textcircled{8} \quad f(x) = \frac{2}{3}x^9 + \frac{4}{5}x^5$$

$$f'(x) = 6x^8 + 4x^4$$

$$\frac{1}{3} \cdot \frac{2}{3} \quad \frac{1}{5} \cdot \frac{4}{5}$$