

Practice Quiz 4

Directions: For #1-4 find the equation for the slope of the tangent line, that is find the first derivative.

$$1) f(x) = \frac{2}{\sqrt{x}} - \frac{7}{x} + 3x^3 - 7x + 5$$

$$2) f(x) = 3\sqrt[5]{x^3} - \frac{4}{x^3} + \frac{5}{\sqrt[4]{x}}$$

$$3) f(x) = \frac{6\sqrt[4]{x^3}}{5} - \frac{x^2+4}{x^2} - 16\sqrt[6]{x^5}$$

$$4) f(x) = \frac{9x^2}{\sqrt{x}} + \frac{6}{5\sqrt[5]{x^2}} - \frac{\sqrt[7]{x^3}}{3}$$

$$5) \lim_{h \rightarrow 0} \frac{4(x+h)^6 - 3(x+h)^4 + 2(x+h)^3 - 14(x+h)^2 - (4x^6 - 3x^4 + 2x^3 - 14x^2)}{h}$$

$$6) \lim_{h \rightarrow 0} \frac{\frac{2}{9}(x+h)^3 - \frac{4}{5}(x+h)^2 + \frac{6}{7}(x+h) + 10 - \left(\frac{2x^3}{9} - \frac{4x^2}{5} + \frac{6x}{7} + 10 - \frac{10}{x^2}\right)}{h}$$

7) Find the relative max and min for the graph of
 $y = \frac{2x^3}{3} + \frac{9x^2}{2} - \frac{5x}{1} + \frac{8}{3}$.

8) Find the relative max and min for the graph of
 $y = \frac{x^4}{4} + \frac{x^3}{3} - 2x^2 - 4x + 16$.