

HW 17: Unit 3.3 – Derivative Using Alternate Method

1. Find the derivative of the function $f(x) = \frac{1}{x^2}$ at $x = 2$ using $f'(a) = \lim_{x \rightarrow a} \frac{f(x) - f(a)}{x - a}$.
2. Find the derivative of the function $f(x) = \frac{1}{x^2}$ at $x = 1$ using $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$.
3. Find the derivative of the function $f(x) = x^2 + 3x + 2$ at $x = 2$ using $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$. Then find the equation of the tangent line.
4. Find the derivative of the function $f(x) = 2x^2 - 3$ at $x = 3$ using $f'(a) = \lim_{x \rightarrow a} \frac{f(x) - f(a)}{x - a}$.
5. Find the derivative of the function $f(x) = 2x^2 - 13x + 5$ at $x = 3$ using “value first” or $f'(3) = \lim_{h \rightarrow 0} \frac{f(3+h) - f(3)}{h}$.