

Graphing Workshop

1. $f(x) = \frac{3x}{x-1}$; $f'(x) = \frac{-3}{(x-1)^2}$; $f''(x) = \frac{6}{(x-1)^3}$

$$2. f(x) = \frac{2x^2}{x^2 - 1}; \quad f'(x) = \frac{-4x}{(x^2 - 1)^2}; \quad f''(x) = \frac{12x^2 + 4}{(x^2 - 1)^3}$$

$$3. f(x) = \frac{x^2}{\sqrt{x+1}}; \quad f'(x) = \frac{3x^2 + 4x}{2(x+1)^{3/2}}; \quad f''(x) = \frac{3x^2 + 8x + 8}{4(x+1)^{5/2}}$$

$$4. f(x) = \frac{x^3}{x^2 + 1}; \quad f'(x) = \frac{x^4 + 3x^2}{(x^2 + 1)^2}; \quad f''(x) = \frac{-2x^3 + 6x}{(x^2 + 1)^3}$$