Bellwork 9/29

$$f(x) = \frac{1}{x}$$

1. Find $f'(x)$.
2. Find an equation for the line tangent to f at $x = -2$.

reset

Bellwork 9/29 - Solutions, Part 1

$$f'(x) = \lim_{h \to 0} \left(\frac{\frac{1}{x+h} - \frac{1}{x}}{h} \right)$$

$$= \lim_{h \to 0} \left(\frac{\frac{x-x-h}{x^2+hx}}{h} \right)$$

$$= \lim_{h \to 0} \left[\frac{-\cancel{h}}{\cancel{h}(x^2 + hx)} \right] = \boxed{-\frac{1}{x^2}}$$

Bellwork 9/29 - Solutions, Part 2

$$y - y_1 = m(x - x_1)$$

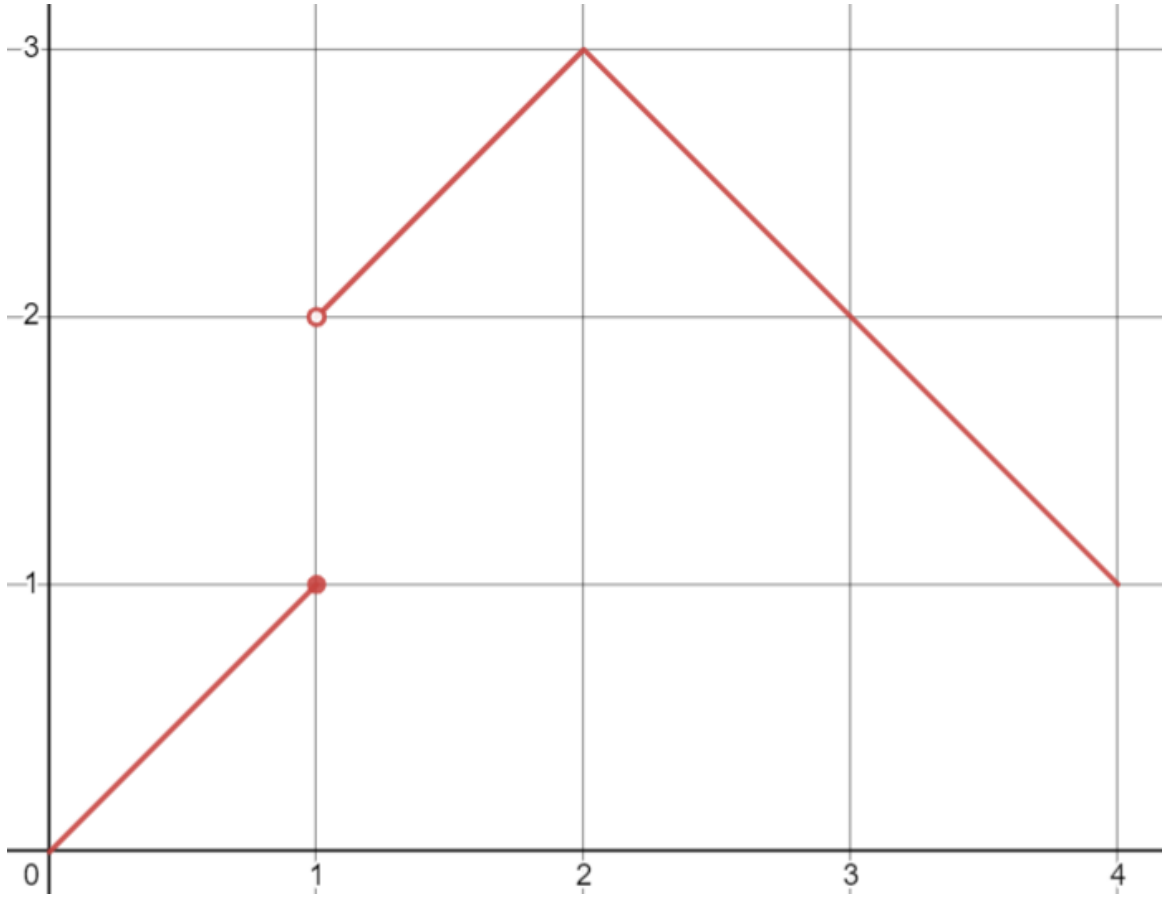
$$\implies y - f(-2) = f'(-2)(x + 2)$$

$$\implies y = -\frac{1}{4}(x + 2) - \frac{1}{2}$$

$$\implies \boxed{y = -\frac{1}{4}x - 1}$$

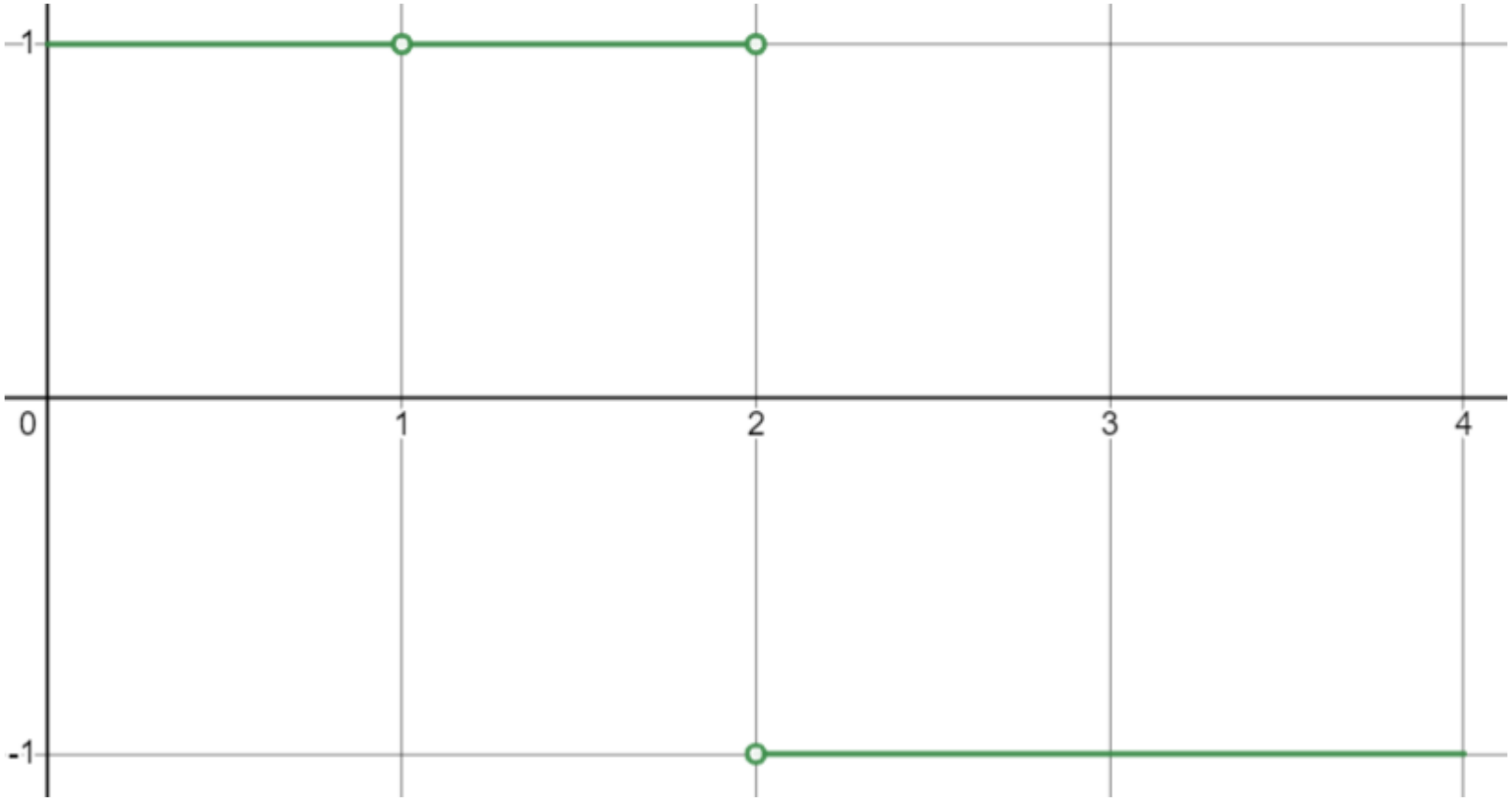
Exercise 1

Function f is graphed below:



Sketch $f'(x)$ and find where f is not differentiable.

Exercise 1 - Solution



$$\boxed{x = 1,\ 2}$$