b) \[ f(2) = \frac{1}{2} \times 2 = 1, \quad f'(2) = -\frac{1}{2} \times 2 = -1 \]

\[ p(2, 2), \quad m_{\text{sec}} = \frac{y - y_1}{x - x_1} = \frac{-1 - 1}{x - 2} = \frac{-2}{x - 2} \]

\[ y = 4 - x \]

\[ y = 2 - x^2 \]

\[ \lim_{x \to 2} g(x) = 1 - g(2) \quad \text{continuous at } x = 2 \]

\[ \lim_{x \to 3} g(x) = 0 \neq g(3) \quad \text{at } x = 3 \]

\[ \lim_{x \to 4} g(x) = \pi = g(4) \quad \text{continuous from right at } x = 4 \]

\[ \frac{1}{2}x + 2x = \lim_{x \to 2} \frac{x^2 - 4x}{x - 2} \]

\[ = -2 \quad \text{in both directions} \]

\[ \lim_{x \to 3} x^2 = 9 \]

\[ \lim_{x \to 3^+} x^2 = 9 \quad \text{as } x \to 3^+ \]

\[ \lim_{x \to 3^-} x^2 = 9 \quad \text{as } x \to 3^- \]

\[ \text{Graph: } y = 2x - 0, y = 2x - 0 \text{ together} \]

They meet at a kink, so not differentiable at \( x = 2 \).