Continuity

$$g(x) = \begin{cases} 1-3x & x < -6 \\ 7 & x = -6 \\ x^3 & -6 < x < 1 \\ 1 & x = 1 \\ 2-x & x > 1 \end{cases}$$

(a) $x = -6$ **(b)** $x = 1$

$$g(x) = \begin{cases} 2x & x < 6 \\ x-1 & x \geq 6 \end{cases}$$

(a) $x = 4$ **(b)** $x = 6$

$$h(t) = \begin{cases} t^2 & t < -2 \\ t+6 & t \geq -2 \end{cases}$$

(a) $t = -2$ **(b)** $t = 10$

Limits

Evaluate $\lim_{z \to 8} \dfrac{2z^2 - 17z + 8}{8 - z}$, if it exists.

Evaluate $\lim_{h \to 0} \dfrac{(6+h)^2 - 36}{h}$, if it exists.

Evaluate $\lim_{z \to 4} \dfrac{\sqrt{z} - 2}{z - 4}$, if it exists.

Evaluate $\lim_{x \to 0} \dfrac{x}{3 - \sqrt{x+9}}$, if it exists.

$$\lim_{x \to -\infty} \frac{3x^7 - 4x^2 + 1}{5 - 10x^2}$$

Find the derivative of the given functions.

$$h(y) = y^{-4} - 9y^{-3} + 8y^{-2} + 12$$

$$y = \sqrt{x} + 8\sqrt[3]{x} - 2\sqrt[4]{x}$$

$$f(t) = \frac{4}{t} - \frac{1}{6t^3} + \frac{8}{t^5}$$

$$g(y) = (y-4)\left(2y + y^2\right)$$

$$h(x) = \frac{4x^3 - 7x + 8}{x}$$

Find the derivative using Product and Quotient Rule

$$f(t) = \left(4t^2 - t\right)\left(t^3 - 8t^2 + 12\right)$$

$$R(w) = \frac{3w + w^4}{2w^2 + 1}$$

$$f(x) = \frac{\sqrt{x} + 2x}{7x - 4x^2}$$