Name : _____ Score : _____

Teacher : _____ Date : _____

# Limits At Discontinuities

**Evaluate each limit.**

1) $\lim_{x \to -5^+} p(x) =$ _____

$p(x) = x + \frac{1}{10}|10 - x^2|$

2) $\lim_{x \to \frac{1}{3}^-} q(x) =$ _____

$q(x) = 3x - |6x - 1|$

3) $\lim_{x \to 3^-} b(x) =$ _____

$b(x) = \frac{4(x - 3)}{|x - 3|}$

4) $\lim_{x \to -6^-} b(x) =$ _____

$$b(x) = \begin{cases} x^3 + 4x^2 - 9x - 36 & \text{if } x < -6 \\ x^3 - x^2 - 16x + 16 & \text{if } x > -6 \end{cases}$$

5) $\lim_{x \to 5^-} h(x) =$ _____

$$h(x) = \begin{cases} x^3 + 7x^2 + 8x - 16 & \text{if } x < 5 \\ x - 2 & \text{if } x > 5 \end{cases}$$

6) $\lim_{x \to 2^+} a(x) =$ _____

$a(x) = \frac{|2x - 4|}{2 - x}$

7) $\lim_{x \to -7^+} p(x) =$ _____

$$p(x) = \begin{cases} x^3 + 6x^2 - 7x - 60 & \text{if } x < -7 \\ x^3 - 3x^2 - x + 3 & \text{if } x > -7 \end{cases}$$

8) $\lim_{x \to 4^+} q(x) =$ _____

$$q(x) = \begin{cases} x^3 - 2x^2 - 15x + 36 & \text{if } x < 4 \\ x^3 + 6x^2 - 15x - 100 & \text{if } x > 4 \end{cases}$$

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# Limits At Discontinuities

**Evaluate each limit.**

1) $\lim_{x \to -5^+} p(x) = \frac{-7}{2}$

$$p(x) = x + \frac{1}{10}|10 - x^2|$$

2) $\lim_{x \to \frac{1}{3}^-} q(x) = 0$

$$q(x) = 3x - |6x - 1|$$

3) $\lim_{x \to 3^-} b(x) = -4$

$$b(x) = \frac{4(x - 3)}{|x - 3|}$$

4) $\lim_{x \to -6^-} b(x) = -54$

$$b(x) = \begin{cases} x^3 + 4x^2 - 9x - 36 & \text{if } x < -6 \\ x^3 - x^2 - 16x + 16 & \text{if } x > -6 \end{cases}$$

5) $\lim_{x \to 5^-} h(x) = 324$

$$h(x) = \begin{cases} x^3 + 7x^2 + 8x - 16 & \text{if } x < 5 \\ x - 2 & \text{if } x > 5 \end{cases}$$

6) $\lim_{x \to 2^+} a(x) = -2$

$$a(x) = \frac{|2x - 4|}{2 - x}$$

7) $\lim_{x \to -7^+} p(x) = -480$

$$p(x) = \begin{cases} x^3 + 6x^2 - 7x - 60 & \text{if } x < -7 \\ x^3 - 3x^2 - x + 3 & \text{if } x > -7 \end{cases}$$

8) $\lim_{x \to 4^+} q(x) = 0$

$$q(x) = \begin{cases} x^3 - 2x^2 - 15x + 36 & \text{if } x < 4 \\ x^3 + 6x^2 - 15x - 100 & \text{if } x > 4 \end{cases}$$