Name : _____ Score : _____

Teacher : _____ Date : _____

Intervals of Continuity

Find the interval(s) upon which each function is continuous.

Classify each discontinuity as a removable, jump, or essential discontinuity.

1) $b(x) = \dfrac{|\,2x - 4\,|}{2 - x}$

2) $p(x) = \dfrac{x + 2}{x(x - 1)}$

3) $a(x) = \begin{cases} \frac{1}{4}x^2 & \text{if } x < 2 \\ 5 - 2x & \text{if } x > 2 \end{cases}$

4) $g(x) = |(x + 1)^2 - 4| - 2$

5) $q(x) = \begin{cases} -(x - 1)^2 & \text{if } x < 1 \\ x^3 - 3x^2 + x + 1 & \text{if } x \geq 1 \end{cases}$

6) $h(x) = \begin{cases} x^3 + 9x^2 + 27x + 27 & \text{if } x < 6 \\ x^3 + 3x^2 & \text{if } x > 6 \end{cases}$

7) $q(x) = \dfrac{(x + 5)x}{(x + 5)(x - 1)}$

8) $f(x) = \begin{cases} x^3 + 8x^2 + 21x + 18 & \text{if } x \leq 7 \\ x^3 + 5x^2 - 25x - 125 & \text{if } x > 7 \end{cases}$

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Find the interval(s) upon which each function is continuous.

Classify each discontinuity as a removable, jump, or essential discontinuity.

1) $b(x) = \frac{|\,2x - 4\,|}{2 - x}$

$(-\infty, 2), (2, \infty)$

Jump discontinuity at x = 2

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

$(-\infty, 0), (0, 1), (1, \infty)$

Essential discontuity at x = 0

Essential discontinuity at x = 1

3) $a(x) = \begin{cases} \frac{1}{4}x^2 & \text{if } x < 2 \\ 5 - 2x & \text{if } x > 2 \end{cases}$

$(-\infty, 2), (2, \infty)$

Jump discontinuity at x = 2)

4) $g(x) = |(x + 1)^2 - 4| - 2$

$(-\infty, \infty)$

No discontinuities

5) $q(x) = \begin{cases} -(x - 1)^2 & \text{if } x < 1 \\ x^3 - 3x^2 + x + 1 & \text{if } x \geq 1 \end{cases}$

$(-\infty, 1), (1, \infty)$

No discontinuities

6) $h(x) = \begin{cases} x^3 + 9x^2 + 27x + 27 & \text{if } x < 6 \\ x^3 + 3x^2 & \text{if } x > 6 \end{cases}$

$(-\infty, 6), (6, \infty)$

Jump discontinuity at x = 6

7) $q(x) = \frac{(x + 5)x}{(x + 5)(x - 1)}$

$(-\infty, -5), (-5, 1), (1, \infty)$

Removable discontuity at x = -5

Essential discontinuity at x = 1

8) $f(x) = \begin{cases} x^3 + 8x^2 + 21x + 18 & \text{if } x \leq 7 \\ x^3 + 5x^2 - 25x - 125 & \text{if } x > 7 \end{cases}$

$(-\infty, 7], (7, \infty)$

Jump discontinuity at x = 7