

Name : _____

Score : _____

Teacher : _____

Date : _____

Understanding of Critical Points

Find the critical points, discontinuities and the intervals where the function is increasing and decreasing.

1) $y = x^3 + 3x^2 - 45x + 11$

2) $y = x^3 - 9x^2 + 24x - 19$

3) $y = -x^3 + 6x^2 - 9x - 7$

4) $y = -x^2 - 2x + 16$

5) $y = -3x^4 + 16x^3 - 30x^2 + 24x + 16$

6) $y = -2x^3 - 15x^2 + 23$

7) $y = 3x^4 - 40x^3 + 150x^2 - 11$

8) $y = 3x^4 + 4x^3 - 72x^2 + 23$

9) $y = x^2 + 10x + 12$

10) $y = x^2 + 4x - 20$



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Understanding of Critical Points

Find the critical points, discontinuities and the intervals where the function is increasing and decreasing.

1) $y = x^3 + 3x^2 - 45x + 11$

Critical Point at $x = -5, 3$

No discontinuities.

Increasing: $(-\infty, -5), (3, \infty)$

Decreasing: $(-5, 3)$

2) $y = x^3 - 9x^2 + 24x - 19$

Critical Point at $x = 2, 4$

No discontinuities.

Increasing: $(-\infty, 2), (4, \infty)$

Decreasing: $(2, 4)$

3) $y = -x^3 + 6x^2 - 9x - 7$

Critical Point at $x = 1, 3$

No discontinuities.

Decreasing: $(-\infty, 1), (3, \infty)$

Increasing: $(1, 3)$

4) $y = -x^2 - 2x + 16$

Critical Point at $x = -1$

No discontinuities.

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

Decreasing: $(-1, \infty)$

5) $y = -3x^4 + 16x^3 - 30x^2 + 24x + 16$

Critical Point at $x = 1, 2$

No discontinuities.

Increasing: $(-\infty, 2)$

Decreasing: $(2, \infty)$

6) $y = -2x^3 - 15x^2 + 23$

Critical Point at $x = -5, 0$

No discontinuities.

Decreasing: $(-\infty, -5), (0, \infty)$

Increasing: $(-5, 0)$

7) $y = 3x^4 - 40x^3 + 150x^2 - 11$

Critical Point at $x = 0, 5$

No discontinuities.

Decreasing: $(-\infty, 0)$

Increasing: $(0, \infty)$

8) $y = 3x^4 + 4x^3 - 72x^2 + 23$

Critical Point at $x = -4, 0, 3$

No discontinuities.

Decreasing: $(-\infty, -4), (0, 3)$

Increasing: $(-4, 0), (3, \infty)$

9) $y = x^2 + 10x + 12$

Critical Point at $x = -5$

No discontinuities.

Decreasing: $(-\infty, -5)$

Increasing: $(-5, \infty)$

10) $y = x^2 + 4x - 20$

Critical Point at $x = -2$

No discontinuities.

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

Increasing: $(-2, \infty)$

