

Name : _____

Score : _____

Teacher : _____

Date : _____

Understanding of Concavity

Find the inflection points and the intervals where the function is concave up or down.

1) $y = x^4 - 8x^3 + 24x^2 - 12x + 8$

2) $y = x^4 + 8x^3 + 22x - 9$

3) $y = -21x^2 + 8x - 8$

4) $y = 2x^3 + 12x^2 - 7x + 9$

5) $y = x^3 - 15x^2 + 4x - 7$

6) $y = -2x^3 - 18x^2 - 13x - 5$

7) $y = x^3 - 12x^2 - 9x - 9$

8) $y = 126x^2 - 17x + 6$

9) $y = -x^4 + 12x^3 - 30x^2 - 15x + 9$

10) $y = -x^4 + 12x^3 - 54x^2 + 20x + 8$



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Understanding of Concavity

Find the inflection points and the intervals where the function is concave up or down.

1) $y = x^4 - 8x^3 + 24x^2 - 12x + 8$

No inflection points.

Concave Up: $(-\infty, \infty)$

2) $y = x^4 + 8x^3 + 22x - 9$

Inflection points at $x = -4, 0$

Concave Up: $(-\infty, -4), (0, \infty)$

Concave Down: $(-4, 0)$

3) $y = -21x^2 + 8x - 8$

No inflection points.

Concave Down: $(-\infty, \infty)$

4) $y = 2x^3 + 12x^2 - 7x + 9$

Inflection Point at $x = -2$

Concave Down: $(-\infty, -2)$

Concave Up: $(-2, \infty)$

5) $y = x^3 - 15x^2 + 4x - 7$

Inflection Point at $x = 5$

Concave Down: $(-\infty, 5)$

Concave Up: $(5, \infty)$

6) $y = -2x^3 - 18x^2 - 13x - 5$

Inflection Point at $x = -3$

Concave Up: $(-\infty, -3)$

Concave Down: $(-3, \infty)$

7) $y = x^3 - 12x^2 - 9x - 9$

Inflection Point at $x = 4$

Concave Down: $(-\infty, 4)$

Concave Up: $(4, \infty)$

8) $y = 126x^2 - 17x + 6$

No inflection points.

Concave Up: $(-\infty, \infty)$

9) $y = -x^4 + 12x^3 - 30x^2 - 15x + 9$

Inflection points at $x = 1, 5$

Concave Down: $(-\infty, 1), (5, \infty)$

Concave Up: $(1, 5)$

10) $y = -x^4 + 12x^3 - 54x^2 + 20x + 8$

No inflection points.

Concave Down: $(-\infty, \infty)$

