Name : _____ Score : _____

Teacher : _____ Date : _____

Understanding of Concavity

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

1) $y = 108x^2 + 17x - 9$

2) $y = -2x^3 - 6x^2 + 19x + 8$

3) $y = 10x^2 + x - 7$

4) $y = x^4 + 8x^3 - 30x^2 - 18x + 5$

5) $y = x^3 + 12x^2 - 5x + 9$

6) $y = -x^4 + 6x^3 + 24x^2 + 18x + 6$

7) $y = -x^4 - 16x^3 - 96x^2 + 17x + 8$

8) $y = 132x^2 + 13x + 7$

9) $y = 2x^3 - 18x^2 - 5x + 9$

10) $y = -6x^2 + x - 7$

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Understanding of Concavity

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

1) $y = 108x^2 + 17x - 9$

No inflection points.
Concave Up: $(-\infty, \infty)$

2) $y = -2x^3 - 6x^2 + 19x + 8$

Inflection Point at x = -1
Concave Up: $(-\infty, -1)$
Concave Down: $(-1, \infty)$

3) $y = 10x^2 + x - 7$

No inflection points.
Concave Up: $(-\infty, \infty)$

4) $y = x^4 + 8x^3 - 30x^2 - 18x + 5$

Inflection points at x = -5, 1
Concave Up: $(-\infty, -5), (1, \infty)$
Concave Down: (-5, 1)

5) $y = x^3 + 12x^2 - 5x + 9$

Inflection Point at x = -4
Concave Down: $(-\infty, -4)$
Concave Up: $(-4, \infty)$

6) $y = -x^4 + 6x^3 + 24x^2 + 18x + 6$

Inflection points at x = -1, 4
Concave Down: $(-\infty, -1), (4, \infty)$
Concave Up: (-1, 4)

7) $y = -x^4 - 16x^3 - 96x^2 + 17x + 8$

No inflection points.
Concave Down: $(-\infty, \infty)$

8) $y = 132x^2 + 13x + 7$

No inflection points.
Concave Up: $(-\infty, \infty)$

9) $y = 2x^3 - 18x^2 - 5x + 9$

Inflection Point at x = 3
Concave Down: $(-\infty, 3)$
Concave Up: $(3, \infty)$

10) $y = -6x^2 + x - 7$

No inflection points.
Concave Down: $(-\infty, \infty)$