Name _____ Date _____
Mr. Schlansky Algebra II

Intervals with Key Points

1. Over what intervals are $f(x) = x^3 + 3x^2 - x - 2$:

Increasing Decreasing Positive Negative

2. Over what intervals are $f(x) = -x^3 - 2x^2 + 2x + 3$:

Increasing Decreasing Positive Negative

3. Over what intervals are $f(x) = -x^4 + 15x^2 - 7$:

Increasing Decreasing Positive Negative

4. Over what intervals are $f(x) = x^3 + 8x^2 + 3x - 8$:

Increasing Decreasing Positive Negative

5. Given $f(x) = x^4 - x^3 - 6x^2$, for what values of x will $f(x) > 0$?

1) $x < -2$, only
2) $x < -2$ or $x > 3$
3) $x < -2$ or $0 \le x \le 3$
4) $x > 3$, only

6. At which x value is the graph of $f(x) = 2x^3 - 11x^2 - 14x + 26$ *not* decreasing?

1) -.5
2) 3.9
3) 1.7
4) 4.3

7. The graph of $y = 2^x - 4$ is positive on which interval?

1) $(-\infty, \infty)$
2) $(2, \infty)$
3) $(0, \infty)$
4) $(-4, \infty)$

8. An estimate of the number of milligrams of a medication in the bloodstream t hours after 400 mg has been taken can be modeled by the function below.

$$I(t) = 0.5t^4 + 3.45t^3 - 96.65t^2 + 347.7t,$$

where $0 \le t \le 6$

Over what time interval does the amount of medication in the bloodstream strictly increase?

1) 0 to 2 hours
2) 0 to 3 hours
3) 2 to 6 hours
4) 3 to 6 hours