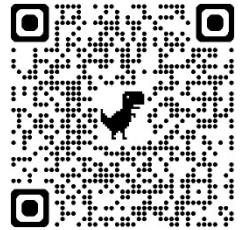


Name \_\_\_\_\_  
Mr. Schlansky

Date \_\_\_\_\_  
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  $0 \leq x \leq 3$
  - 4)  $x > 3$ , only

6. At which  $x$  value is the graph of  $f(x) = 2x^3 - 11x^2 - 14x + 26$  *not* decreasing?
- 1)  $-0.5$
  - 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  $0 \leq t \leq 6$

- 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