7-5 Discriminant

Name: _____ Time› Start: _____ Finish: _____ Total Time = _____

Use the discriminant of each equation to determine how many solutions exist.

1. $3x^2 – x – 8 = 0$ Number of solutions = _____

2. $2x^2 – 4x + 2 = 0$ Number of solutions = _____

3. $x^2 – 3x – 10 = 0$ Number of solutions = _____

4. $4x^2 + x + 10 = 0$ Number of solutions = _____

5. Consider the equation $x^2 – 6x + 13 = 0$. No real number solutions exist.
Thus, the equation $f(x) = x^2 – 6x + 13$ does not cross the x-axis – important concept.
Determine the y-intercept and then calculate the derivative to find the vertex of the parabola.
Now determine a third point on the parabola without plugging values into the equation.

y-intercept = _____ vertex = _____ 3rd point = _____

6. Consider the equation $x^2 + 2x + 2 = 0$. No real number solutions exist.
Thus, the equation $f(x) = x^2 + 2x + 2$ does not cross the x-axis – important concept.
Determine the y-intercept and then calculate the derivative to find the vertex of the parabola.
Now determine a third point on the parabola without plugging values into the equation.

y-intercept = _____ vertex = _____ 3rd point = _____

SAT Questions

_____ 7. If $\frac{x}{2} = y$ and 2y = y, what is the value of x?

_____ 8. The average (arithmetic mean) of x and y is m, where $m \neq 0$.
What is the average of (arithmetic mean) of x, y, and $2m$?

A. m B. $\frac{4}{3}m$ C. $\frac{3}{2}m$ D. $\frac{5}{3}m$ E. $2m$

_____ 9. If $5x^2 - 15x = 0$ and $x \neq 0$, find the value of x.

_____ 10. If $n = 5^{2000} + 5^{2002}$, then what are the prime factors of n?

A. 5 only
B. 2 and 5 only
C. 2, 5, and 10 only
D. 2, 5, and 13 only
E. 2, 5, 1000, and 1001 only