Name _____ Date _____
Mr. Schlansky Algebra II

Solving Systems of Inequalities Graphically with TI

1. Given $f(x) = x^2$ and $g(x) = -\frac{1}{2}x + 5$, over what interval is $f(x) < g(x)$?

2. Given $f(x) = -|x|$ and $g(x) = -\sqrt{x+4}$, over what interval is $f(x) \geq g(x)$?

3. Given $m(x) = \log(x)$ and $n(x) = (x-5)^2$, over what interval is $m(x) \geq n(x)$?

4. Given $a(x) = e^x - 9$ and $b(x) = -|x-3| - 2$, over what interval is $a(x) < b(x)$?

5. If $f(x) = \frac{1}{2}x^3 + 3x^2 - 4x$ and $g(x) = 5\log_3(x+10)$, then which value, rounded to the *nearest tenth*, is a solution to $f(x) > g(x)$?

1) -7.0
2) -6.8
3) -1.1
4) 2.1

6. For which value of x will $log(x+5) \geq |x-1| - 3$?

1) -6
2) -4
3) 4
4) 6

7. For which value of *x* will $\sqrt[3]{x-1} > -\frac{1}{2}|x| + 3$?

1) -3.1
2) 1.1
3) 2.7
4) 3.9

8. The function $r(x) = \frac{1}{12}x$ represents the revenue from Carla's business and $c(x) = 2\log(x)$ represents her cost for selling *x* unites of merchandise. To the *nearest tenth*, over what interval will *c(x) > r(x)*? Explain the meaning of this interval in the context of the problem.

9. The height of a ball thrown in the air can be modeled by $b(t) = -16t^2 + 32t$ and the height of an eagle can be modeled by $e(t) = -\frac{1}{2}t + 14$ after *t* seconds. To the *nearest hundredth*, over what interval is *e(t)<b(t)*? Explain the meaning of this interval in the context of the problem.

10. The height of object A can be represented by $A(x) = 2\sqrt[3]{x} + 15$ and the height of object B can be represented by $B(x) = 20(0.8)^x$ after *x* seconds. Over what interval is $A(x) > B(x)$? Explain its meaning in the context of the problem.

11. The value of stock A can be modeled by $A(t) = 2\sqrt{t+10} + 1$ and the value of stock B can be represented by $B(t) = t^3 - 3t^2 - 3t + 10$, where *t* represents time in days. Over what positive interval, rounded to the *nearest tenth*, is *A(x)>B(x)*? Explain the meaning of this interval in the context of the problem.