Name: _____

Recitation Instructor and Time: _____

Studio College Algebra – Exam 2
October 14, 2008

Directions: There are 16 problems on this exam. Please show all your work.

1. Solve: $2x^2 - 9x - 5 = 0$.

2. Write $x^2 + 6x - 10$ in the form $a(x-h)^2 + k$.

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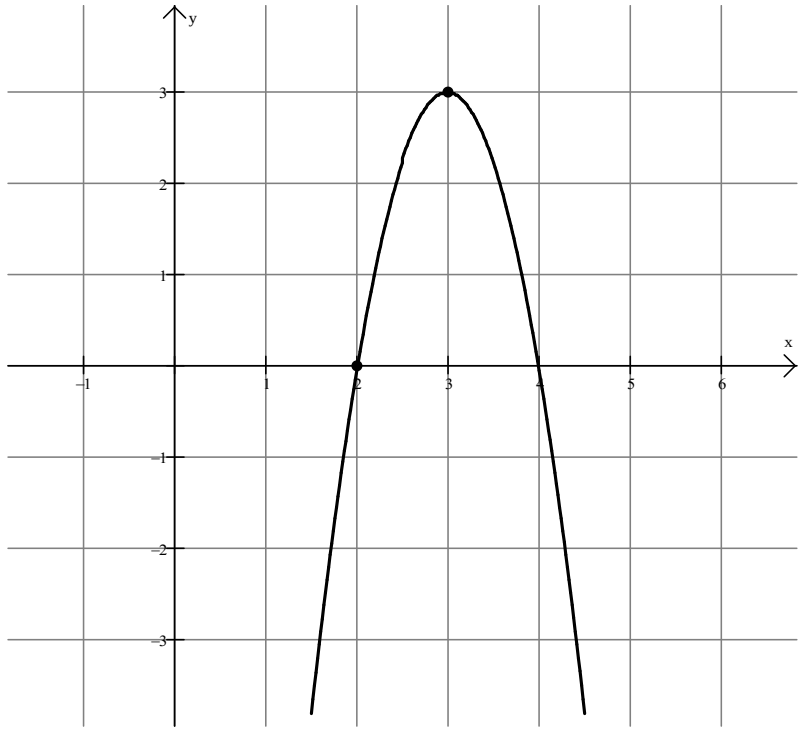
3. The parabola given below has vertex at (3,3) and passes through the point (2,0). Find an equation of the parabola in the form $ax^2 + bx + c$.



4. If $P(x) = .6x^2 + 120x + 100$, for what value of x does $P(x)$ attain a minimum value? What is the minimum value?

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5. Let $f(x) = x^2 + 2x - 3$ and $g(x) = 3x - 1$. Answer the following:

a) Compute $f(x)g(x)$ (simplify completely).

b) Compute $g(f(x))$ (simplify completely).

6. Given $h(x) = 2x^2 - 5x + 1$, find $h(h(2))$.

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7. Given $f(x) = x^2 + 5$ on the domain $x \geq 0$, find $f^{-1}(x)$.

8. Solve: $|2x+1| = 3x+5$

9. Solve: $|3x-8| < 12$

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10. Solve and check your answers: $x+3=\sqrt{3x+7}$

11. Solve: $x^2+3x+4>2$

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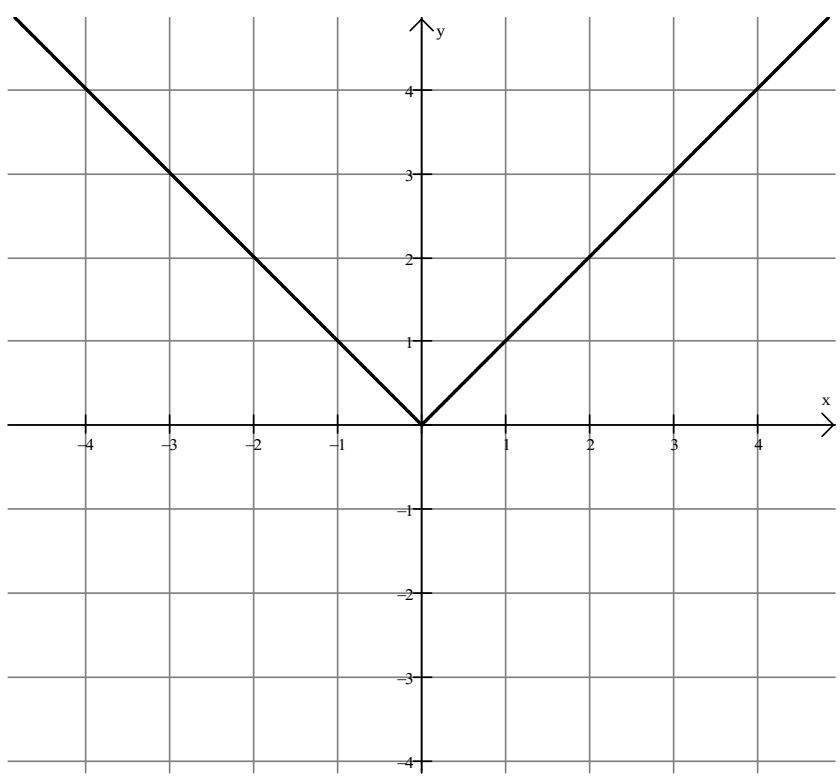
12. The cost of producing x units in a manufacturing plant is given by the function $C(x) = 0.30(x+3)^2 + 100$. The number of units produced in t hours is given by $x(t) = 5t$.

a) Find $C(x(t))$, and simplify completely.

b) Find $C(x(4))$.

13. Given *f(x)* below, graph *f(x-3)+1* on the same set of axes.



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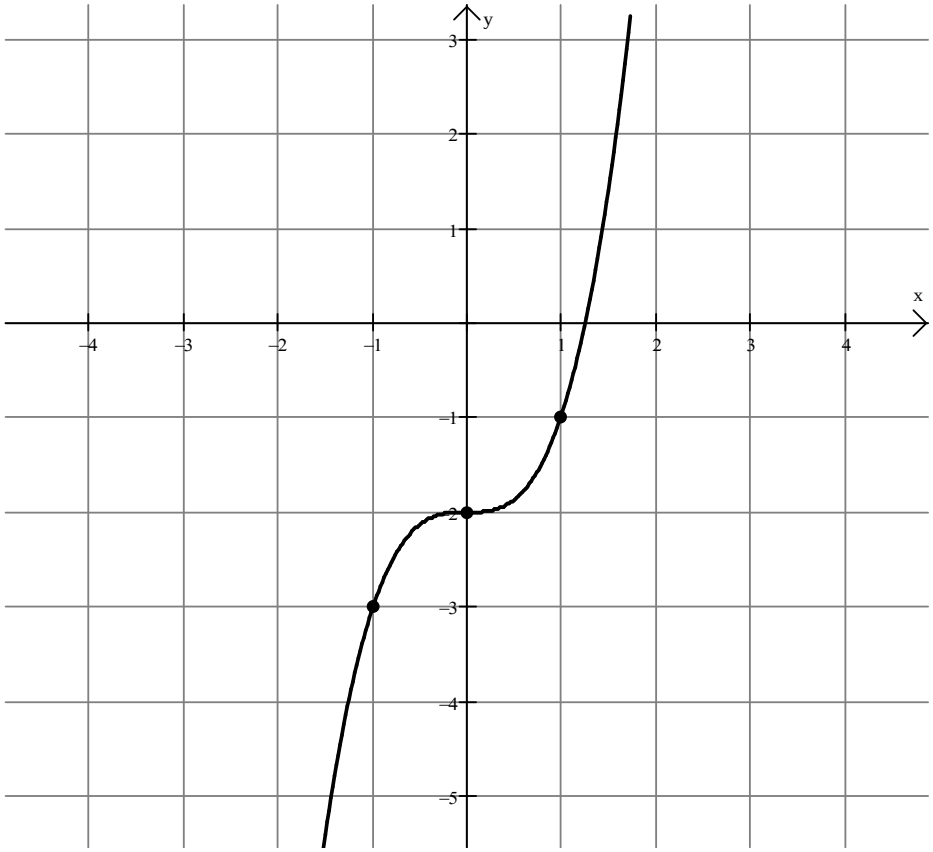
14. Suppose the number of on-duty injuries associated with a certain occupation could be modeled by the function $I(x) = 124.8x^{-.346}$, where x represents the numbers of years after 1990.

a) Find *I(7)* and label your answer.

b) Between the years 1995 and 2000, are the number of injuries increasing or decreasing? How do you know?

15. Given *f(x)* below, draw $f^{-1}(x)$ on the same plot.



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16. The revenue function associated with a certain product is given by $R(x) = 105x$ dollars, and the cost function is given by $C(x) = 1000 + 3x + .1x^2$ dollars, where x is the number of units that are produced and sold.

a) What is the profit function, *P(x)*, associated with this situation?

b) What is the profit on the production and sale of 100 units?