Name: _____

Recitation Instructor and Time: _____

Studio College Algebra – Exam 2
March 3, 2009

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

1. Solve: $x^2 - 6x + 5 = 0$.

2. Write $x^2 + 8x - 15$ in the form $a(x-h)^2 + k$.

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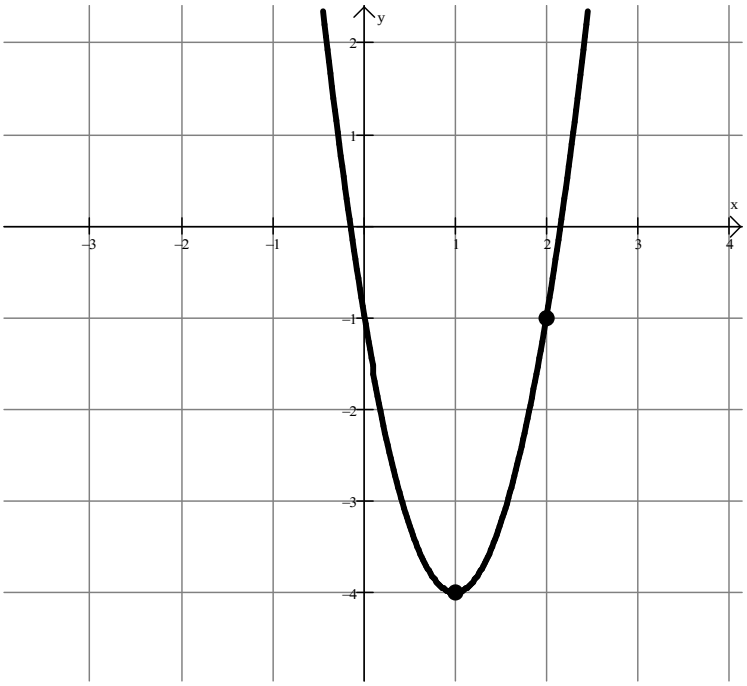
3. The parabola given below has vertex at (1,-4) and passes through the point (2,-1). Find an equation of the parabola in the form $ax^2 + bx + c$.



4. If $P(x) = -.3x^2 + 90x + 100$, for what value of x does $P(x)$ attain a maximum value? What is the maximum value?

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5. Let $f(x) = x^2 + 3x - 2$ and $g(x) = 4x - 1$. Answer the following:

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

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

6. Given $h(x) = 3x^2 + 2x - 5$, find $h(h(2))$.

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7. Given $f(x) = x^2 - 3$ on the domain $x \geq 0$, find $f^{-1}(x)$.

8. Solve: $|x+1| = 5x+7$

9. Solve: $|2x-9| < 21$

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10. Solve and check your answers: $x + 4 = \sqrt{x + 6}$

11. Solve the quadratic inequality $(x - 2)(x + 5) > 0$

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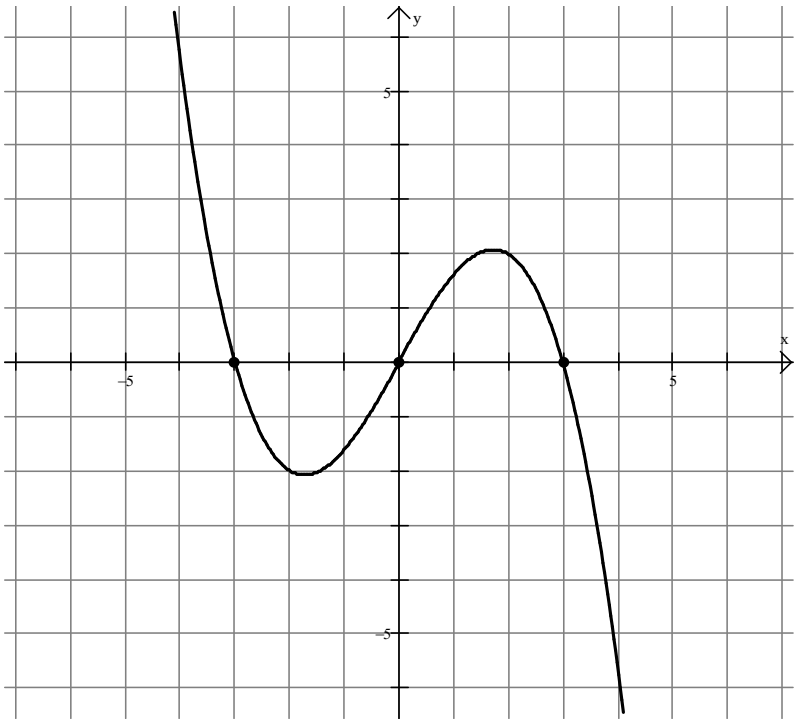
12. A screen saver starts out as a dot, with a radius expanding at a rate of 5 mm/sec. If the radius of the circle after *t* seconds is given by $r(t) = 5t$, and the area of the resulting circle is given by $A(r) = 3.14r^2$, answer the following.

a) Find $A(r(t))$, and simplify completely.

b) Find $A(r(2))$.

13. Given *f(x)* below, graph *f(x+3)-2* on the same set of axes.



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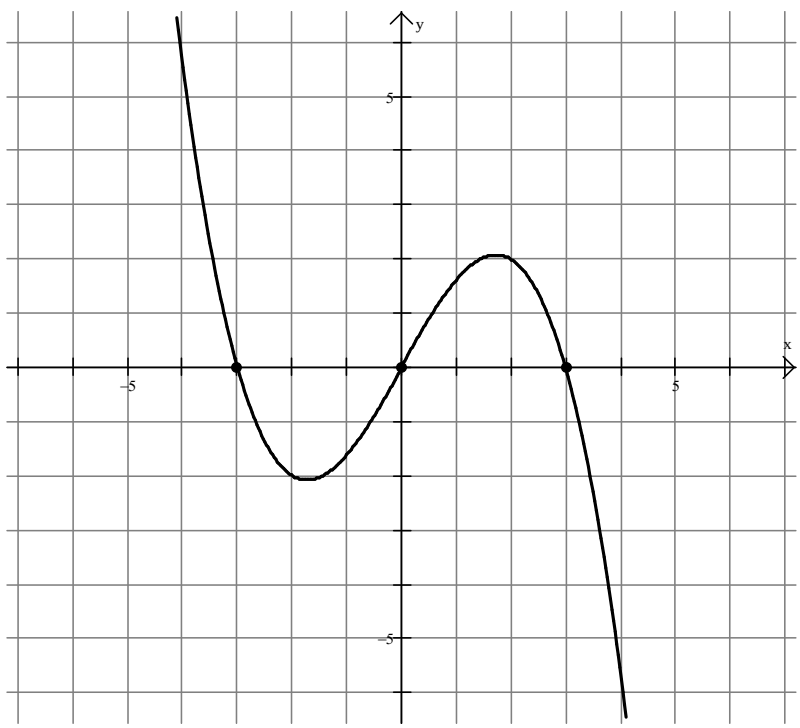
14. The average cost of producing oak bookshelves is $C(x) = 100 + \frac{2500}{x}$, where x is the number of shelves produced per month. What is the average cost per bookshelf if 500 screens are produced?

15. Does the function below have an inverse function? How do you know?



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16. The following table lists the cost of electricity usage for a certain company:

MONTHLY USAGE (in kilowatt-hours)	**MONTHLY CHARGE**
0-100	\$10 plus \$0.02 per kilowatt-hour
More than 100, up to 500	\$15 plus \$0.03 for every kilowatt-hour over 100
More than 500, up to 1000	\$20 plus \$0.04 for every kilowatt-hour over 500

a) Construct a piecewise-defined function $C(x)$ that describes the cost of monthly usage of kilowatt hours, up to 1000 kilowatt hours.

b) Using your answer in part (a), find $C(200)$.