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Recitation Instructor and Time: _____

Studio College Algebra – Exam 2
March 4, 2008

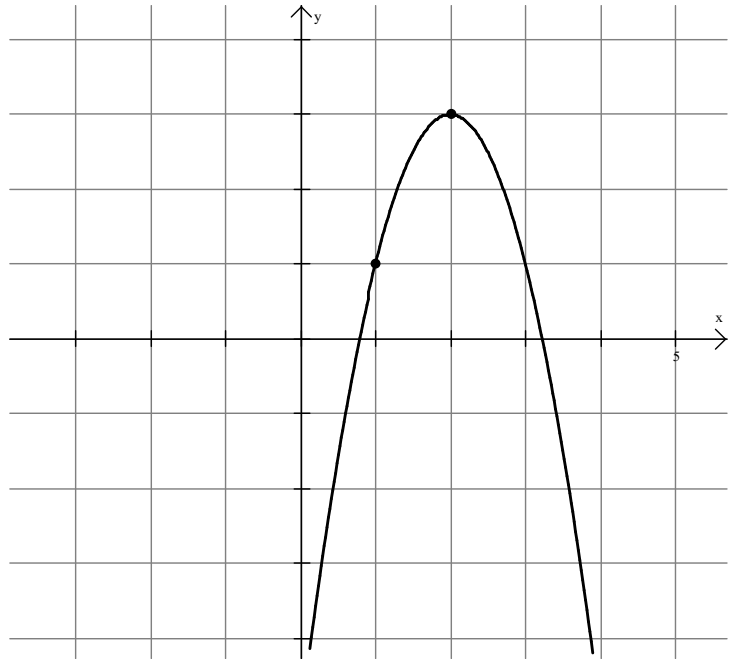
Directions: There are 16 problems on this exam. Please show all your work.

1. Solve: $4x^2 + x - 3 = 0$.

2. Write $x^2 + 4x - 9$ in the form $a(x - h)^2 + k$.

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



4. If $P(x) = -.5x^2 + 12x + 120$, for what value of x does $P(x)$ attain a maximum value? What is the maximum value?

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

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

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

6. Given $g(x) = x^2 + 3x + 1$, find $g(g(2))$.

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7. Given $f(x) = x^2 - 4$ on the domain $x \geq 0$, find $f^{-1}(x)$.

8. Solve: $|3x - 1| = 2x + 7$

9. Solve: $|4x - 1| < 5$

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10. Solve and check your answers: $x + 2 = \sqrt{7x + 2}$

11. Solve: $x^2 - 5x > 7x - 35$

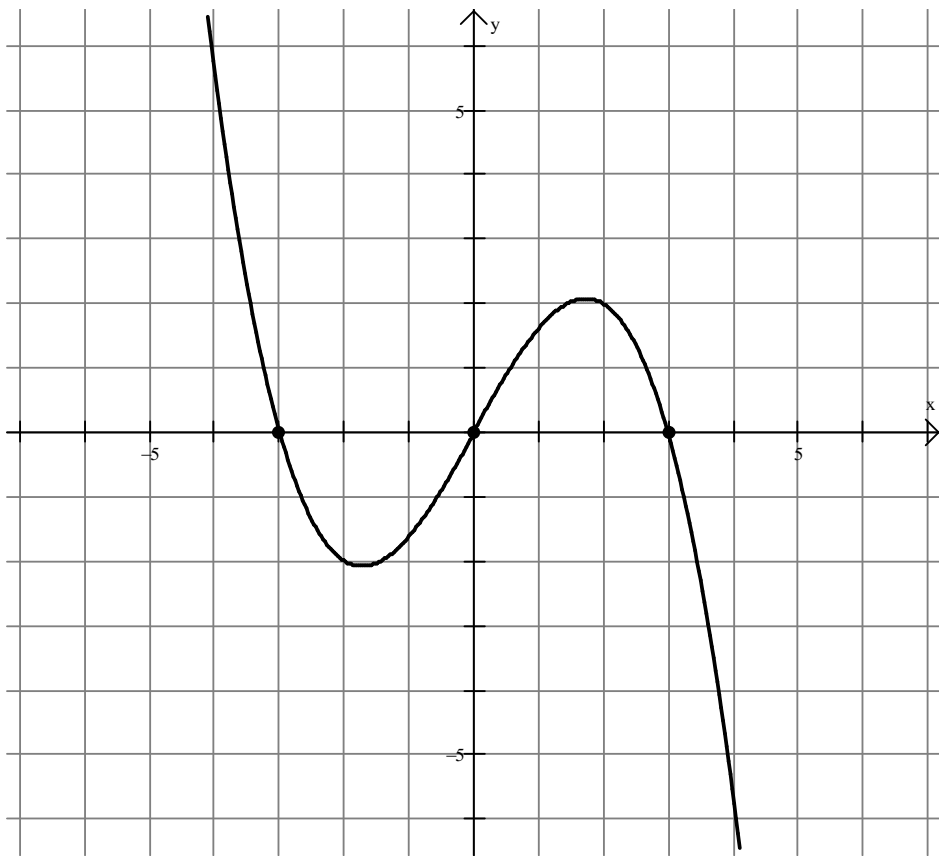
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12. The cost of producing x units in a manufacturing plant is given by the function $C(x) = 0.25(x + 2)^2 + 200$. The number of units produced in t hours is given by $x(t) = 6t$.

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

b) Find $C(x(6))$.

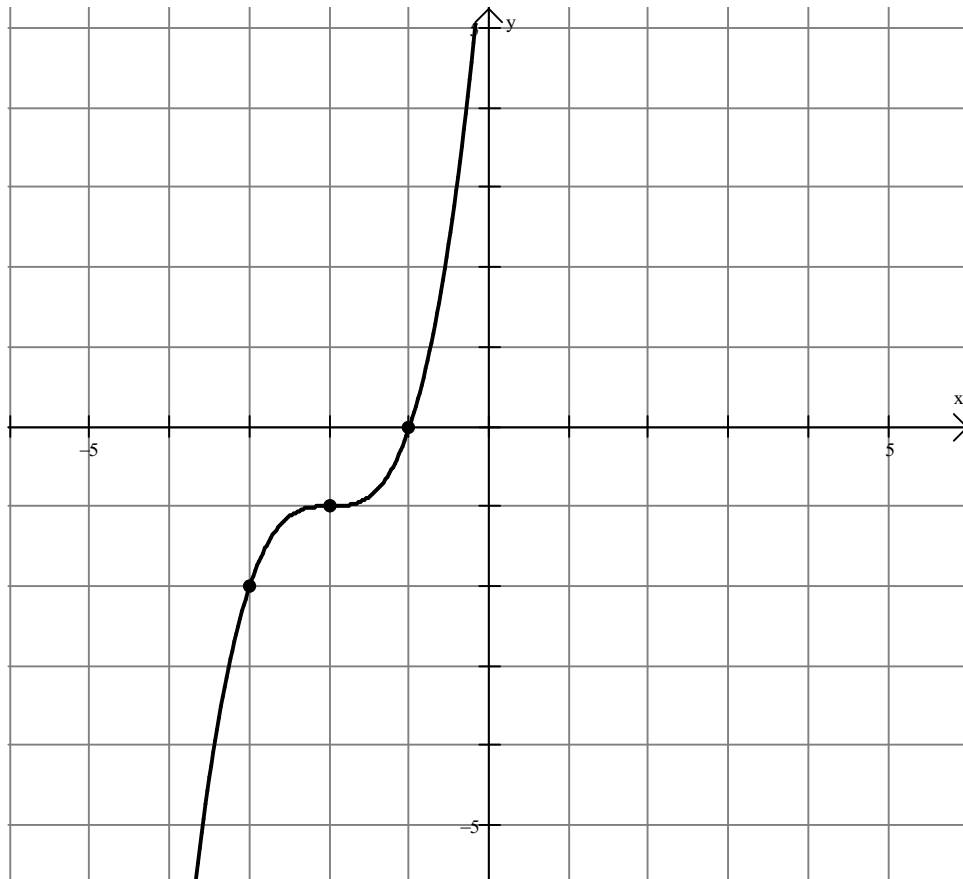
13. Given $f(x)$ below, graph $f(x-1)+2$ on the same set of axes.



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14. The average cost of producing flat screen monitors is $C(x) = 95 + \frac{10,000}{x}$, where x is the number of screens produced per month. What is the average cost per screen if 500 screens are produced?

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



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16. The following table lists the cost of mailing first class letters based on weight:

Weight not over (ounces)	Price
1	\$0.41
2	\$0.58
3	\$0.75
3.5	\$0.92

a) Construct a piecewise-defined function $C(x)$ that describes the cost of mailing letters weighing up to 3.5 ounces.

b) Using your answer in part (a), find $C(2.7)$.