NAME _____ Rec. Instr. _____

Signature _____ Rec. Day/Time _____

College Algebra – Exam 2
March 8, 2005

Show all work for full credit. No notes or books are allowed.

(5 pts) 1. Find the x-intercept of the line $5y - 7x = 40$.

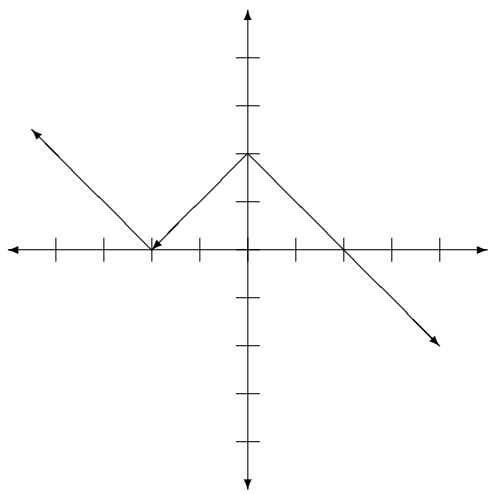
(10 pts) 2. Write the following complex numbers in the form $a + bi$.

a) $(3 - 4i)(5 + 8i)$

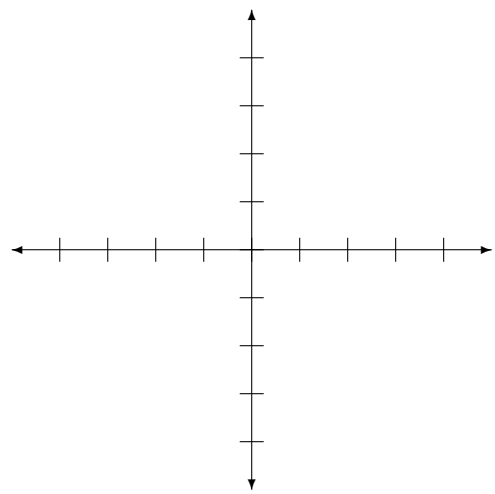
b) $\dfrac{2 + 3i}{4 + 7i}$

(6 pts) 3. Solve the equation $3(x+4)^2 - 75 = 0$.

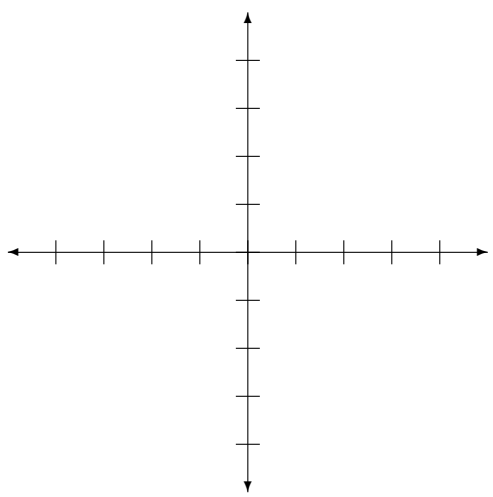
(10pts) 4. The graph of a function $y = f(x)$ is given below. Give the graphs of $y = -2f(x)$, $y = -2f(x+1)$, and $y = 3 - 2f(x+1)$.



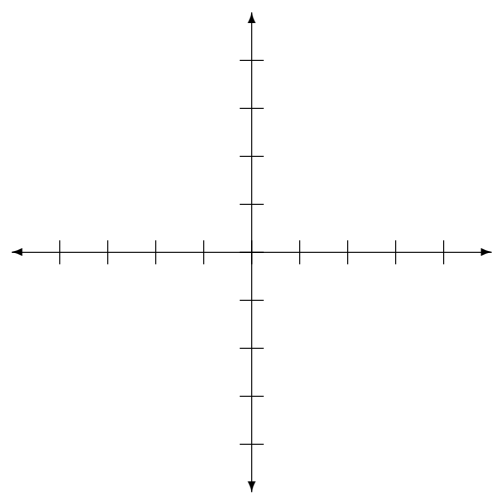
$y = f(x)$



$y = -2f(x)$



$y = -2f(x+1)$



$y = 3 - 2f(x+1)$

(5 pts) 5. Solve the equation $3(2-5x)-2(3x-4)=4x-11$.

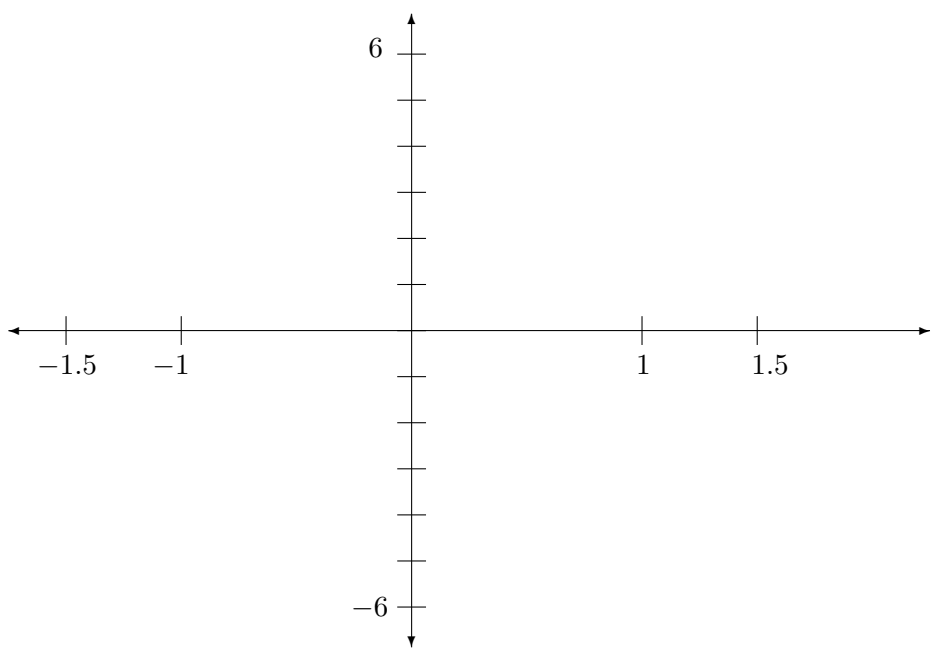
(15 pts) 6.(a) Use the quadratic formula to solve the equation $x^2-3x+3=0$.

(b) Discuss the x-intercepts of the parabola $y=x^2-3x+3$.

(c) Complete the square for $y=x^2-3x+3$.

(8 pts) 7. Solve the equation $t - 2\sqrt{t} - 3 = 0$.

(10 pts) 8.(a) Use your graphing calculator to graph the function $y = 5x^7 - 6x^3 - 2x$ using the window $-1.5 \leq x \leq 1.5$ and $-5 \leq y \leq 5$.



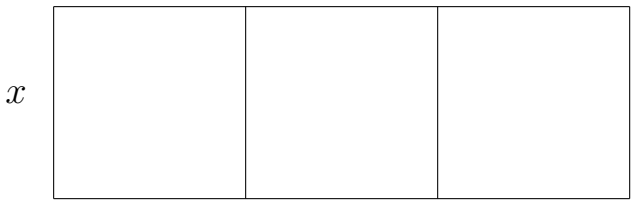
(b) Give the interval (x-coordinates) where the function is decreasing.

(5 pts) 9. Find the x- and y-coordinates of the vertex of the parabola $y = 13x^2 + 26x + 33$.

(6 pts) 10. Does the graph of the function $y = \dfrac{x^2}{x^4 + 1}$ have any symmetry? Explain.

(10 pts) 11. A private airplane leaves airport and flies due east at a speed of 180mph. Two hours later, a jet leaves the same airport and flies due east at a speed of 900 mph. How far from the airport will the jet overtake the private plane?

(10 pts) 12. A farmer has 600 meters of fencing with which to enclose a rectangular garden with two parallel dividers.



(a) Find an equation for the total area of the garden as a function of the one variable x.

(b) Find the dimensions and the area of the garden having maximal total area.