Question 1: For this question consider the function $f(x) = -3x^2 + 5x$.

(a)[2 points]   Is the point $(-1, 2)$ on the graph of f?

(b)[2 points]   What point on the graph of f has x-coordinate $x = -2$?

(c)[3 points]   Find all values of x for which $f(x) = -2$.

(d)[3 points]   Find the x-intercepts of the graph of f.

Question 2 [10 points]: Neatly sketch the graph of the function $f(x) = 3|x - 2| - 1$ below by starting with a basic function and applying three transformations. Your final answer should appear in the last graph below. In your final graph indicate the scale on the x and y axes and label at least one point.
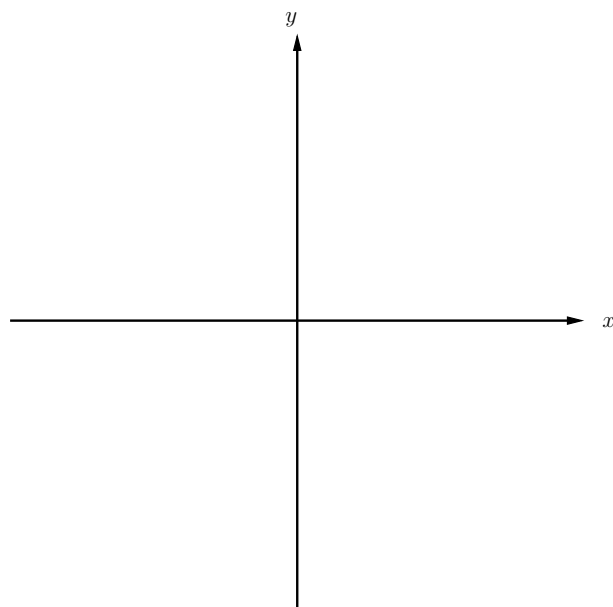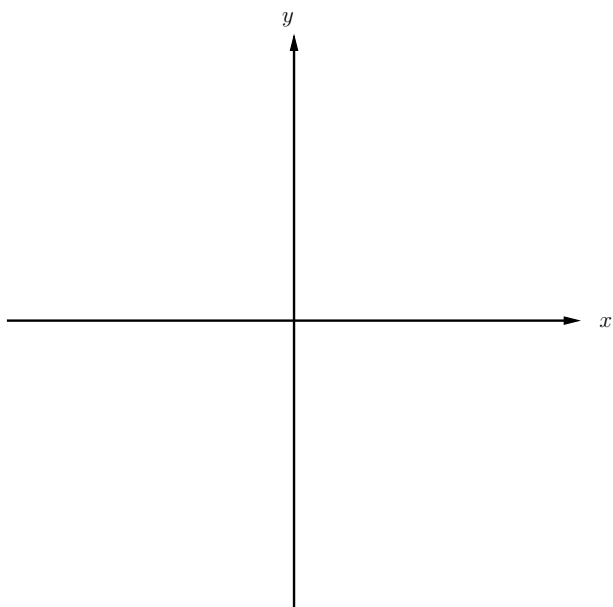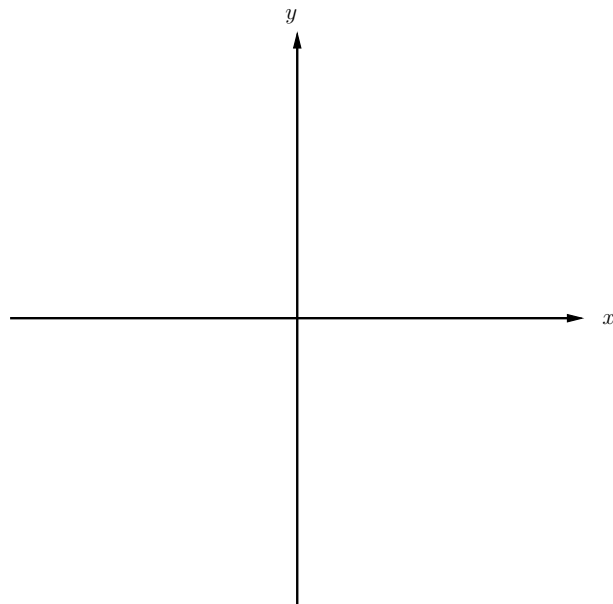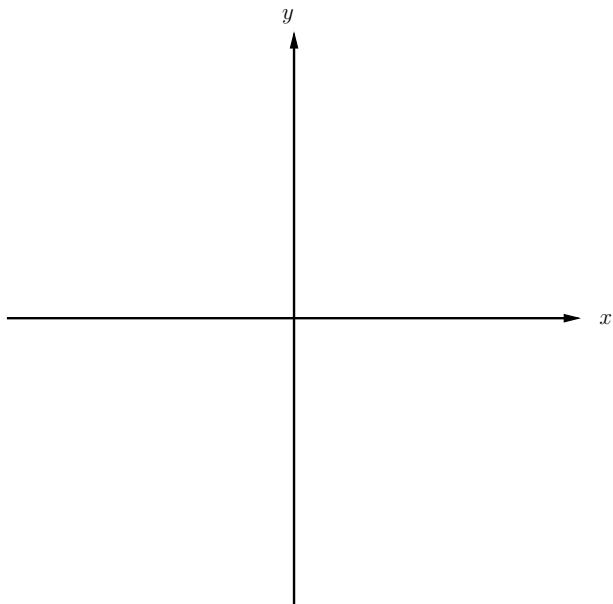
Question 3: The supply function for a particular good is $S(p) = -100 + 20p$, while the demand function for the same good is $D(p) = 600 - 15p$. Here p is the price of the good in dollars.

(a)[5 points] Find the equilibrium price and quantity.

(b)[5 points] Determine the prices for which quantity demanded is greater than quantity supplied.

Question 4: For this question consider the quadratic function $f(x) = -4x^2 + 16x - 12$

(a)[5 points] Find the vertex and axis of symmetry of the graph of f.

(b)[5 points] Sketch the graph of f.

Question 5: The price p and quantity sold x of a certain product obey the demand equation

$$p = -\frac{1}{5}x + 10, \qquad \text{where } 0 \le x \le 50 .$$

(a)[3 points] Find an expression (a formula) for $R(x)$, the revenue as a function of x.

(b)[5 points] Determine the maximum revenue.

(c)[2 points] What price should be charged to maximize revenue?