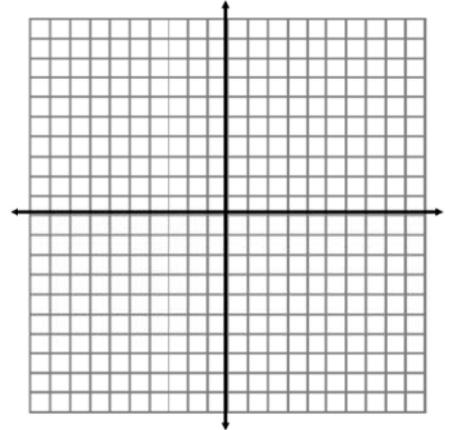
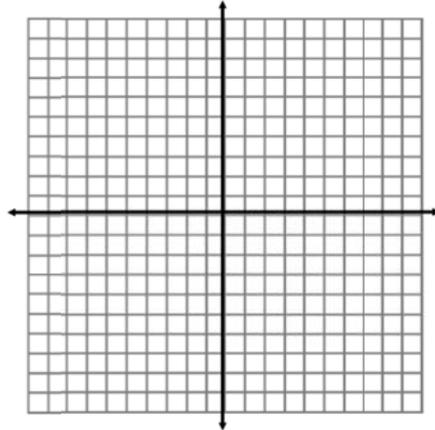
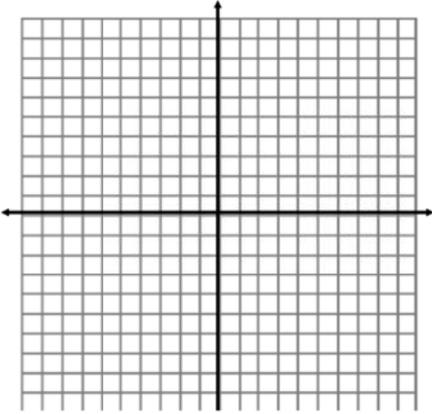


Directions: Graph. Label the vertex and axis of symmetry. Make sure you include as many points as possible on the graph (at least 3). 3 points each.

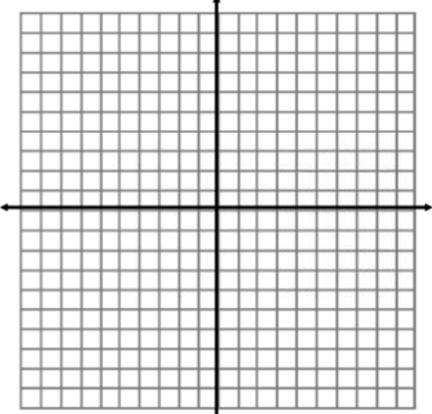
1) $f(x) = -(x + 5)^2 + 6$

2) $f(x) = 2(x - 2)^2 - 8$

3) $f(x) = -x^2 + 2x + 3$



4) $f(x) = 2x^2 - 8x + 9$



DIRECTIONS: Tell whether the function has a minimum value or a maximum value. Find the minimum or maximum value. 2 points each.

5) $y = -0.54(x - 0.52)^2 - 0.85$

6) $y = 45x^2 + 630x - 235$

DIRECTIONS: Factor each completely. 3 points each.

9) $n^3 - n^2 - 56n$

10) $100n^2 - 140n + 49$

11) $10p^2 + 23p + 6$

DIRECTIONS: Solve AND sketch each answer. 4 points each.

15) $-x^2 + 8x + 15 = -2x^2$

16) $7x^2 - 6 = x$

DIRECTIONS: Simplify

19) $2\sqrt{10} \cdot 3\sqrt{15}$

20) $\frac{4}{5-4\sqrt{3}}$

DIRECTIONS: Solve each equation by taking square roots. 3 points each.

21) $\frac{1}{5}(x - 7)^2 = 10$

22) $3(x - 24)^2 - 42 = 66$

Unit 5 Applications

1) One morning Mr. Brust wakes up realizes how ridiculous his man-pris look on him. He decides to sell all of his man-pris and that he'll offer a discount to people who buy in bulk. He's going to offer a \$4 discount for each pair of man-pris bought...so the more you buy the cheaper each item is. He came up with formula for his profit of $P(x) = x(168 - 4x)$, where P is the profit and x is the number of items bought.

a) Find Brust's man-pris selling formula in standard form.

b) What is the maximum profit Brust can make? How many items would he have to sell?

c) How many pairs of man-pris will he need to sell if he makes nothing? (HINT: Find the zeroes of the function)

2) Bean realizes that he's going to need more room at his house for his ever expanding family. He decides to give his kids more room in their play room. Currently the room is 20 feet by 25 feet and he decides that he'll add 250 square feet to that by adding the same distance, x, to both the length and width of the room.

a) Find the current area of the room.

b) Write an equation that models adding 250 square feet to the area by adding the same distance x to both the length and the width.

c) Solve the equation and find the new dimensions of the room that Bean is going to build.