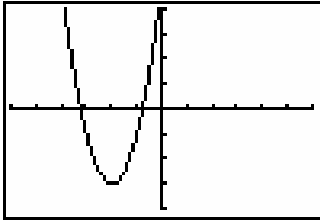


1. For the quadratic function graphed below, identify the vertex and the axis of symmetry. 1. _____



$[-6, 6, 1]$ by $[-4, 4, 1]$

For #2 and #3, use the following situation.

A hotel is planning a group room rate. Rooms normally cost \$90 per night. However, for a group, the management will reduce the cost of a room by \$3 for each room rented. The revenue from renting x rooms at the group rate is represented by the function $f(x) = x(90 - 3x)$.

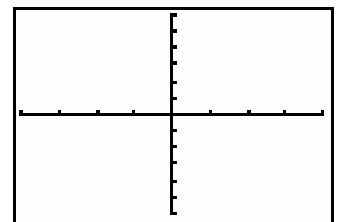
2. What is the revenue from renting 10 rooms at the group rate? 2. _____
3. (a) How many rooms should be rented to maximize revenue? 3. (a) _____
 (b) What is the maximum revenue? (b) _____
4. Find the exact value for the constant a so that $f(x) = ax^2 - 3$ models the data in the table. 4. _____

x	-2	-1	0	1
$f(x)$	5	-1	-3	-1

In #5 and #6, compare the graph of f to the graph of $y = x^2$.

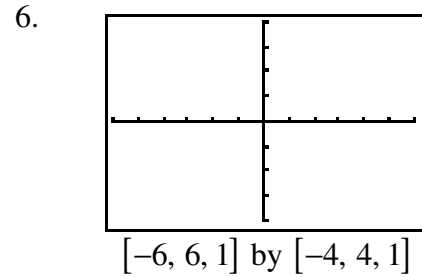
5. Graph $f(x) = 2x^2 + 3$.

5.



$[-4, 4, 1]$ by $[-6, 6, 1]$

6. Graph $f(x) = -2(x-2)^2 + 4$.



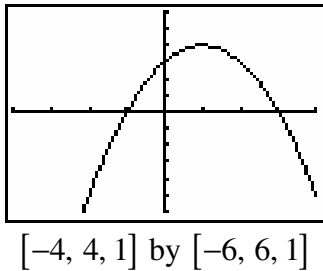
7. Write $y = x^2 - 4x + 1$ in vertex form.

Identify the vertex and axis of symmetry.

7. _____

8. Use the graph of $f(x) = ax^2 + bx + c$ to solve $ax^2 + bx + c = 0$. 8. _____

Then evaluate $f(1)$.



8. _____

9. Using a table, solve the quadratic equation $2x^2 + 4x - 6 = 0$. 9. _____

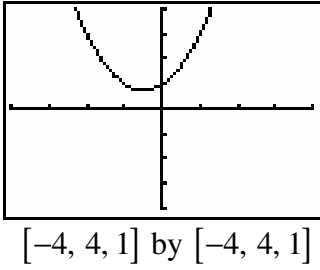
10. Three times the square of a whole number is equal to 48.
Find the number. 10. _____

11. Solve $x^2 + 2x = 5$ by completing the square. 11. _____

12. Solve $2x(x-3) = -1$ by using the quadratic formula. 12. _____

13. Solve $3x^2 + 6x = -2$ by using the quadratic formula. 13. _____

14. A graph of $y = ax^2 + bx + c$ is shown.



(a) State whether $a > 0$ or $a < 0$.

14. (a) _____

(b) Solve $ax^2 + bx + c = 0$.

(b) _____

(c) Determine whether the discriminant is positive, negative, or zero.

(c) _____

15. Complete the following for $-\frac{1}{2}x^2 + 2x - 2 = 0$.

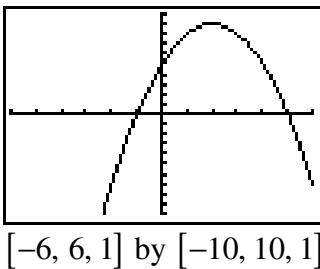
(a) Evaluate the discriminant.

15. (a) _____

(b) How many real solutions are there?

(b) _____

16. The graph of $y = ax^2 + bx + c$ is shown. Solve each equation or inequality.



(a) $ax^2 + bx + c = 0$

16. (a) _____

(b) $ax^2 + bx + c \leq 0$

(b) _____

(c) $ax^2 + bx + c > 0$

(c) _____

17. Solve the quadratic equation in part (a). Use the result to solve the inequalities in parts (b) and (c) and write your answers in interval notation.

(a) $3x^2 - 13x - 10 = 0$

17. (a) _____

(b) $3x^2 - 13x - 10 < 0$

(b) _____

(c) $3x^2 - 13x - 10 \geq 0$

(c) _____

18. Solve $5x^2 + 15x \leq 0$. Write your answer in interval notation. 18. _____

19. Solve $x^6 - 3x^3 - 4 = 0$. Find all real solutions. 19. _____

20. Solve $2x^2 + 2x + 5 = 0$. Find all complex solutions. 20. _____