

Practice Test

Use a table of values to graph the following functions. State the domain and range.

- $y = x^2 + 2x + 5$ **1–2. See Ch. 9 Answer Appendix.**
- $y = 2x^2 - 3x + 1$

Consider $y = x^2 - 7x + 6$.

- Determine whether the function has a *maximum* or *minimum* value. **minimum**
- State the maximum or minimum value. **-6.25**
- What are the domain and range?

D = {all real numbers}; R = $\{y \mid y \geq -6.25\}$

Solve each equation by graphing. If integral roots cannot be found, estimate the roots to the nearest tenth.

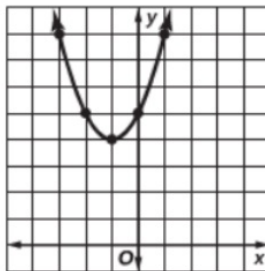
- $x^2 + 7x + 10 = 0$ **-5, -2**
- $x^2 - 5 = -3x$ **-4.2, 1.2**

Describe how the graph of each function is related to the graph of $y = x^2$.

Practice Test

1.

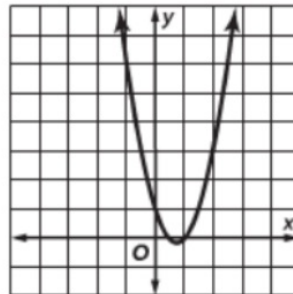
| x | y |
|----|----|
| -3 | 8 |
| -2 | 5 |
| -1 | 4 |
| 0 | 5 |
| 1 | 8 |
| 2 | 13 |



D = {all real numbers}; R = $\{y \mid y \geq 4\}$

2.

| x | y |
|----|----|
| -2 | 15 |
| -1 | 6 |
| 0 | 1 |
| 1 | 0 |
| 2 | 3 |
| 3 | 10 |



D = {all real numbers}; R = $\{y \mid y \geq -0.125\}$

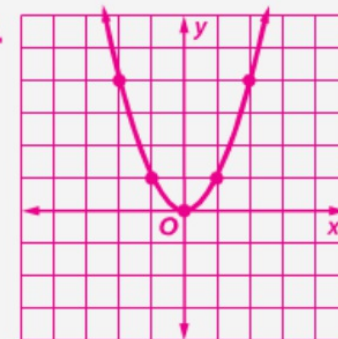
Solve each equation by using the Quadratic Formula. Round to the nearest tenth if necessary.

- $x^2 - x - 30 = 0$ **-5, 6**
- $x^2 - 10x = -15$ **1.8, 8.2**
- $2x^2 + x - 15 = 0$ **2.5, -3**
- BASEBALL** Elias hits a baseball into the air. The equation $h = -16t^2 + 60t + 3$ models the height h in feet of the ball after t seconds. How long is the ball in the air? **about 3.8 seconds**
- Graph $\{(-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4)\}$. Determine whether the ordered pairs represent a *linear function*, a *quadratic function*, or an *exponential function*. **See margin.**
- Look for a pattern in the table to determine which kind of model best describes the data. **linear**

| | | | | | |
|---|---|---|---|---|---|
| x | 0 | 1 | 2 | 3 | 4 |
| y | 1 | 3 | 5 | 7 | 9 |

Additional Answer

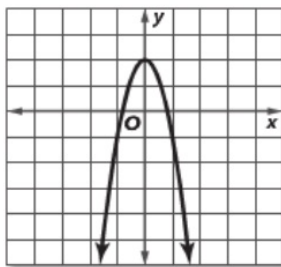
19.



quadratic

Describe how the graph of each function is related to the graph of $f(x) = x^2$.

8. $g(x) = x^2 - 5$ **translated down 5 units**
 9. $g(x) = -3x^2$ **reflected across the x -axis, stretched vertically**
 10. $h(x) = \frac{1}{2}x^2 + 4$ **compressed vertically and translated 4 units up**
 11. **MULTIPLE CHOICE** Which is an equation for the function shown in the graph? **D**



- A $y = -3x^2$
 B $y = 3x^2 + 1$
 C $y = x^2 + 2$
 D $y = -3x^2 + 2$

Solve each equation by completing the square.

12. $x^2 + 2x + 5 = 0$ **no real solution**
 13. $x^2 - x - 6 = 0$ **-2, 3**
 14. $2x^2 - 36 = -6x$ **-6, 3**

| | | | | | |
|----------|---|---|---|---|---|
| y | 1 | 3 | 5 | 7 | 9 |
|----------|---|---|---|---|---|

21. **CAR CLUB** The table shows the number of car club members for four consecutive years after it began.

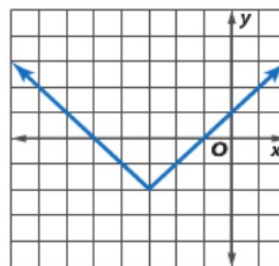
| Time (years) | 0 | 1 | 2 | 3 | 4 |
|--------------|----|----|----|----|-----|
| Members | 10 | 20 | 40 | 80 | 160 |

- a. Determine which model best represents the data. **exponential**
 b. Write a function that models the data. **$y = (10)2^x$**
 c. Predict the number of car club members after 6 years. **640**

Graph each function. **22–25. See Ch. 9 Answer Appendix.**

22. $f(x) = |x - 1|$
 23. $f(x) = -|2x|$
 24. $f(x) = \llbracket x \rrbracket$
 25. $f(x) = \begin{cases} 2x - 1 & \text{if } x < 2 \\ x - 3 & \text{if } x \geq 2 \end{cases}$

26. Determine the domain and range of the function graphed below.



D = all real numbers;
R = $y \geq -2$

