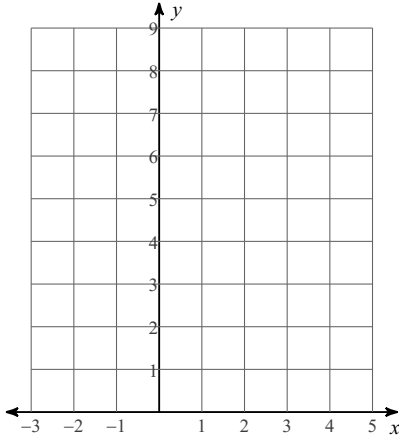


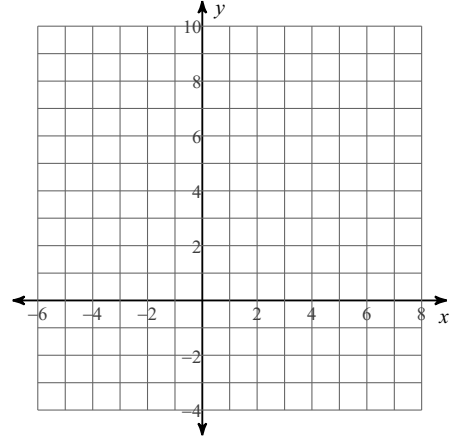
Term 3 Review

Sketch the graph of each inequality.

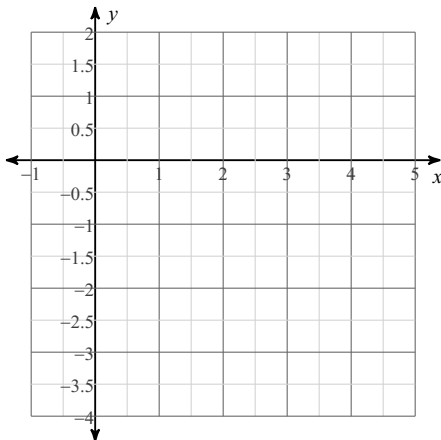
1) $y < (x - 3)^2 + 4$



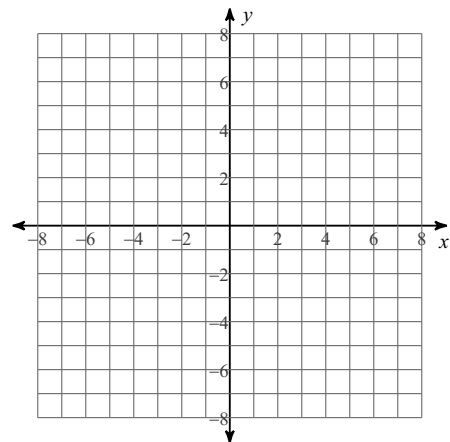
2) $y \geq 3x^2 + 18x + 24$



3) $y < -(x - 3)^2 + 1$

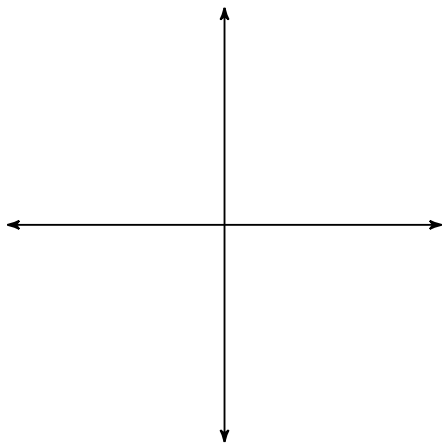


4) $y \leq \frac{1}{2}(x - 2)(x + 4)$



Answer the questions that follow about the given situations.

- 5) A ball is thrown straight up with an initial velocity of 56 feet per second. The height, h , of the ball t seconds after it is thrown is given by the formula $h = 56t - 16t^2$
- a. What is the maximum height?
 - b. What is the height of the ball after 1 second?
 - c. After how many seconds will it return to the ground?
 - d. Sketch a graph of the situation.



Write the equation for the following functions.

- 6) A quadratic function that is vertically compressed by a factor of $\frac{1}{3}$, transformed 2 units to the right and 4 units down.
- 7) An absolute value function that is vertically stretched by a factor of 2, transformed 3 units to the left and 1 unit up.

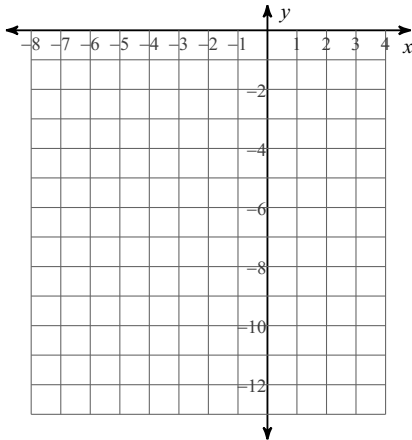
Without graphing, state the shape and describe the transformations of each function.

8) $y = -|x - 1| + 1$

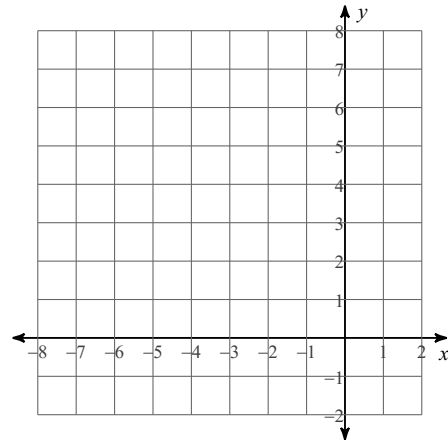
9) $y = 2(x + 3)^2 - 2$

Graph each function. List the Vertex, Domain, and Range.

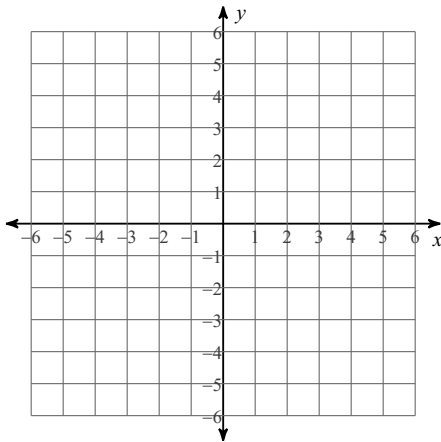
10) $y = -2(x + 3)^2 - 4$



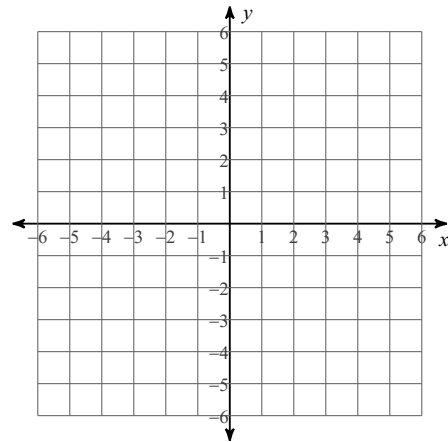
11) $y = 2(x + 3)^2 - 1$



12) $y = |x + 3|$

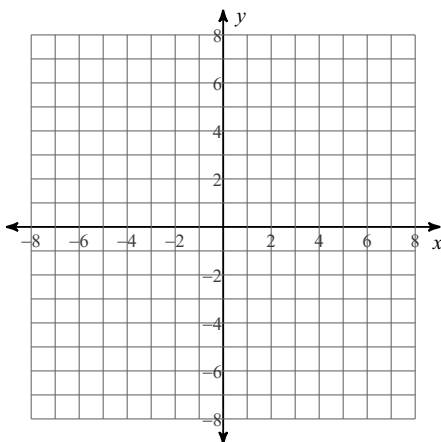


13) $y = -|x - 1| + 2$

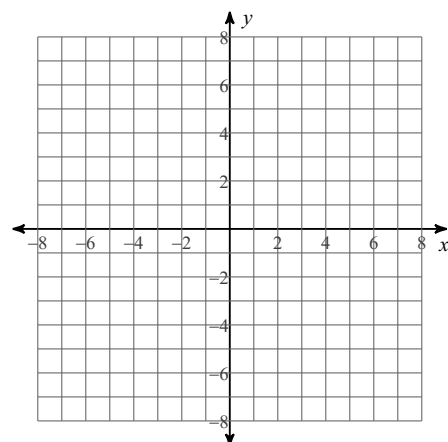


Graph each piecewise function.

14) $f(x) = \begin{cases} 2x + 1, & x \leq 1 \\ (x - 3)^2, & x > 1 \end{cases}$



15) $f(x) = \begin{cases} -|x + 1| + 3, & x < 0 \\ -2(x - 1)^2 + 2, & x \geq 0 \end{cases}$



Perform the indicated operation.

16) $g(n) = -2n - 4$
 $f(n) = 2n^2 + 5n$

Find $(g \circ f)(n)$

17) $f(a) = a + 1$
 $g(a) = a^2 - 2$

Find $(f - g)(a)$

18) $g(n) = n - 2$
 $f(n) = n - 4$

Find $(g \cdot f)(n)$

19) $g(x) = x^3 - 3$
 $f(x) = -x + 3$

Find $(g + f)(x)$

20) $f(x) = 2x - 3$
 $g(x) = -2x^2 + 5 - 2x$

Find $(f - g)(9)$

21) $g(n) = 2n - 5$
 $h(n) = n - 4$

Find $(g \cdot h)(3)$

Factor each completely.

22) $n^2 + 5n$

23) $x^2 + 6x - 16$

24) $x^2 + 8x + 15$

25) $-4b^2 + 60b - 216$

Find the zeros of the quadratic equation by factoring.

26) $y = x^2 + 5x + 6$

27) $y = x^2 - 25$

28) $y = x^2 - x - 20$

29) $y = x^2 + 2x$

Class of travel may have influenced the survival rate on the Titanic, where first-class passengers received special treatment in boarding the lifeboats, while some other passengers were prevented from boarding because of lack of space.

Women			
Person category	Survived (S)	Lost (L)	TOTAL
1 st Class (FC)	140	4	144
2 nd Class (SC)	80	13	93
3 rd Class (TC)	76	89	165
Crew (C)	20	3	23
TOTAL	316	109	425

Find the following probabilities using the data about the women above. Give them as unreduced fractions and percents rounded to the **nearest** percent.

30. $P(S) =$

31. $P(S|FC) =$

32. $P(FC) =$

33. $P(SC) =$

34. $P(TC) =$

35. $P(FC|S) =$

36. $P(TC \cup S) =$

37. $P(FC \cap S) =$

Use the following information to answer the questions below:

$$U = \{5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23\}$$

$$A = \{5, 8, 11, 14, 17, 20, 23\} \quad B = \{6, 12, 18\} \quad C = \{8, 14, 23\} \quad D = \{9, 13, 18, 22\}$$

38. Is $C \subset A$?

39. Is $B \subset D$?

40. What is $B \cup C$?

41. What is $A \cap B$?

42. What is $C \cap D$?

43. What is $B \cup D$?

44. $P(A) =$

45. $P(D) =$

46. $P(A \cap B) =$

47. $P(B \cup C) =$