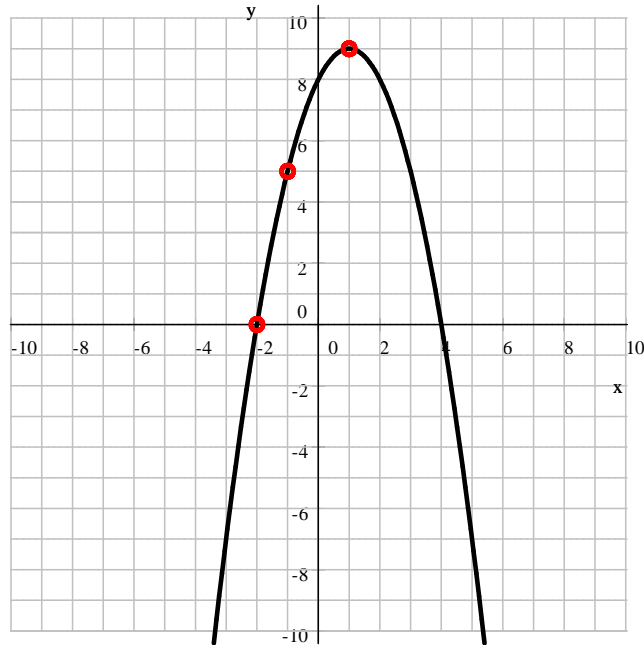


Definition: The graph of an equation in x and y is the set of all points $P(x, y)$ whose coordinates are solution of the equation.

1. Consider the graph shown below.



Among the many points on the graph, $A(-2, 0)$, $B(-1, 5)$, and $C(1, 9)$ are marked. We will use these points to find the equation that belongs with the graph. The equation for this graph is one of the equations listed below.

- (a) Consider the equation $y = 3x + 6$.

- i. Is the point $A(-2, 0)$ on the graph of $y = 3x + 6$?
- ii. Is the point $B(-1, 5)$ on the graph of $y = 3x + 6$?
- iii. Is the point $C(1, 9)$ on the graph of $y = 3x + 6$?
- iv. Is it possible that the graph shown on the picture above is the graph of $y = 3x + 6$?

- (b) Consider the equation $(x - 4)^2 + (y - 5)^2 = 25$

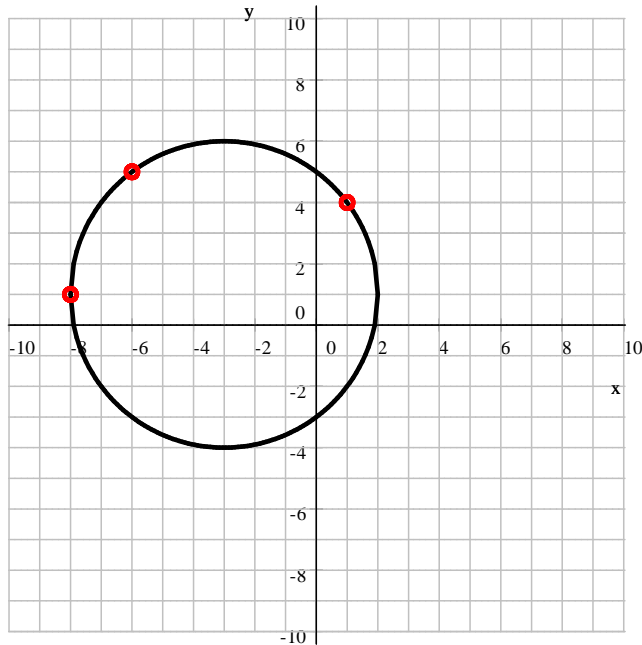
- i. Is the point $A(-2, 0)$ on the graph of $(x - 4)^2 + (y - 5)^2 = 25$?
- ii. Is the point $B(-1, 5)$ on the graph of $(x - 4)^2 + (y - 5)^2 = 25$?
- iii. Is the point $C(1, 9)$ on the graph of $(x - 4)^2 + (y - 5)^2 = 25$?
- iv. Is it possible that the graph shown on the picture above is the graph of $(x - 4)^2 + (y - 5)^2 = 25$?

- (c) Consider the equation $y = -x^2 + 2x + 8$.

- i. Is the point $A(-2, 0)$ on the graph of $y = -x^2 + 2x + 8$?
- ii. Is the point $B(-1, 5)$ on the graph of $y = -x^2 + 2x + 8$?
- iii. Is the point $C(1, 9)$ on the graph of $y = -x^2 + 2x + 8$?
- iv. Is it possible that the graph shown on the picture above is the graph of $y = -x^2 + 2x + 8$?

2. Consider the graph shown on the picture below.

Note that the points $A(-8, 1)$, $B(-6, 5)$, and $C(1, 4)$ are on the graph.



(a) Consider the equation $3y = x + 11$.

- i. Is the point $A(-8, 1)$ on the graph of $3y = x + 11$?
- ii. Is the point $B(-6, 5)$ on the graph of $3y = x + 11$?
- iii. Is the point $C(1, 4)$ on the graph of $3y = x + 11$?
- iv. Is it possible that the graph shown on the picture above is the graph of $3y = x + 11$?

(b) Consider the equation $3y + x^2 = -8x + 3$.

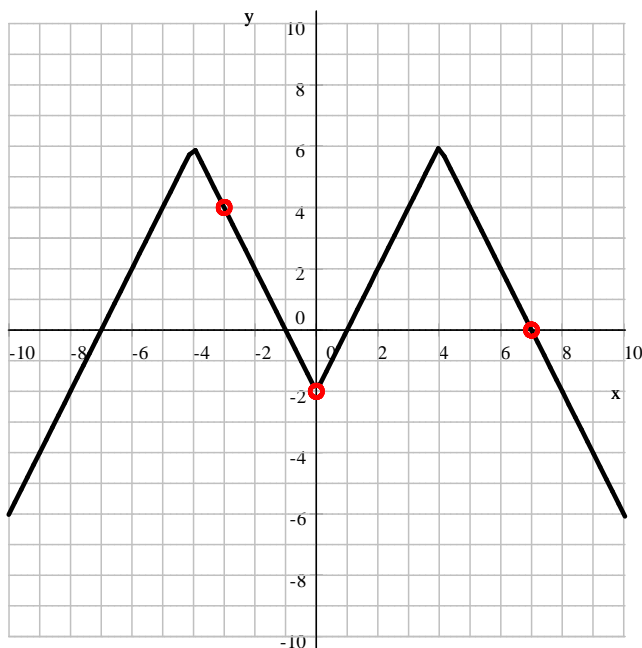
- i. Is the point $A(-8, 1)$ on the graph of $3y + x^2 = -8x + 3$?
- ii. Is the point $B(-6, 5)$ on the graph of $3y + x^2 = -8x + 3$?
- iii. Is the point $C(1, 4)$ on the graph of $3y + x^2 = -8x + 3$?
- iv. Is it possible that the graph shown on the picture above is the graph of $3y + x^2 = -8x + 3$?

(c) Consider the equation $(x + 3)^2 + (y - 1)^2 = 25$.

- i. Is the point $A(-8, 1)$ on the graph of $(x + 3)^2 + (y - 1)^2 = 25$?
- ii. Is the point $B(-6, 5)$ on the graph of $(x + 3)^2 + (y - 1)^2 = 25$?
- iii. Is the point $C(1, 4)$ on the graph of $(x + 3)^2 + (y - 1)^2 = 25$?
- iv. Is it possible that the graph shown on the picture above is the graph of $(x + 3)^2 + (y - 1)^2 = 25$?

3. Consider the graph shown below.

Note that the points $A(-3, 4)$, $B(0, -2)$, and $C(7, 0)$ are on the graph.



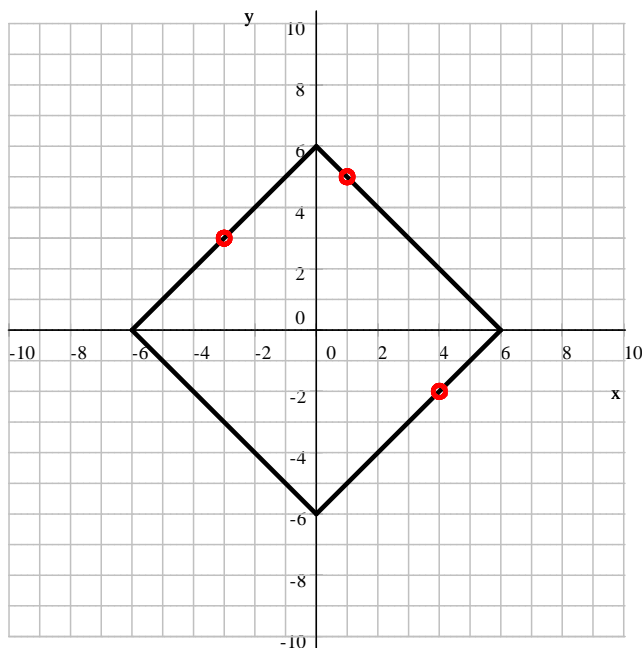
- (a) Consider the equation $y + 2 = |2x|$.
 - i. Is the point $A(-3, 4)$ on the graph of $y + 2 = |2x|$?
 - ii. Is the point $B(0, -2)$ on the graph of $y + 2 = |2x|$?
 - iii. Is the point $C(7, 0)$ on the graph of $y + 2 = |2x|$?
 - iv. Is it possible that the graph shown on the picture above is the graph of $y + 2 = |2x|$?

- (b) Consider the equation $6 - y = |8 - |2x||$.
 - i. Is the point $A(-3, 4)$ on the graph of $6 - y = |8 - |2x||$?
 - ii. Is the point $B(0, -2)$ on the graph of $6 - y = |8 - |2x||$?
 - iii. Is the point $C(7, 0)$ on the graph of $6 - y = |8 - |2x||$?
 - iv. Is it possible that the graph shown on the picture above is the graph of $6 - y = |8 - |2x||$?

- (c) Consider the equation $x^2 + y^2 = 1 + 4(x + y + 5)$.
 - i. Is the point $A(-3, 4)$ on the graph of $x^2 + y^2 = 1 + 4(x + y + 5)$?
 - ii. Is the point $B(0, -2)$ on the graph of $x^2 + y^2 = 1 + 4(x + y + 5)$?
 - iii. Is the point $C(7, 0)$ on the graph of $x^2 + y^2 = 1 + 4(x + y + 5)$?
 - iv. Is it possible that the graph shown on the picture above is the graph of $x^2 + y^2 = 1 + 4(x + y + 5)$?

4. Consider the graph shown on the picture below.

Note that the points $A(-3, 3)$, $B(1, 5)$, and $C(4, -2)$ are on the graph.



- (a) Consider the equation $2y = x + 9$.
 - i. Is the point $A(-3, 3)$ on the graph of $2y = x + 9$?
 - ii. Is the point $B(1, 5)$ on the graph of $2y = x + 9$?
 - iii. Is the point $C(4, -2)$ on the graph of $2y = x + 9$?
 - iv. Is it possible that the graph shown on the picture above is the graph of $2y = x + 9$?

- (b) Consider the equation $|x| + |y| = 6$.
 - i. Is the point $A(-3, 3)$ on the graph of $|x| + |y| = 6$?
 - ii. Is the point $B(1, 5)$ on the graph of $|x| + |y| = 6$?
 - iii. Is the point $C(4, -2)$ on the graph of $|x| + |y| = 6$?
 - iv. Is it possible that the graph shown on the picture above is the graph of $|x| + |y| = 6$?

- (c) Consider the equation $y + 3 = 9 - |x|$.
 - i. Is the point $A(-3, 3)$ on the graph of $y + 3 = 9 - |x|$?
 - ii. Is the point $B(1, 5)$ on the graph of $y + 3 = 9 - |x|$?
 - iii. Is the point $C(4, -2)$ on the graph of $y + 3 = 9 - |x|$?
 - iv. Is it possible that the graph shown on the picture above is the graph of $y + 3 = 9 - |x|$?