

1. Graph the parabola $y = x^2 - 2x - 8$. Compute the coordinates of at least five points on the parabola, including vertex and intercepts.

a) Factor $x^2 - 2x - 8$ by completing the square.

- b) Use your computation above to find each of the following.

polynomial form: $y = x^2 - 2x - 8 \implies y$ -intercept: _____

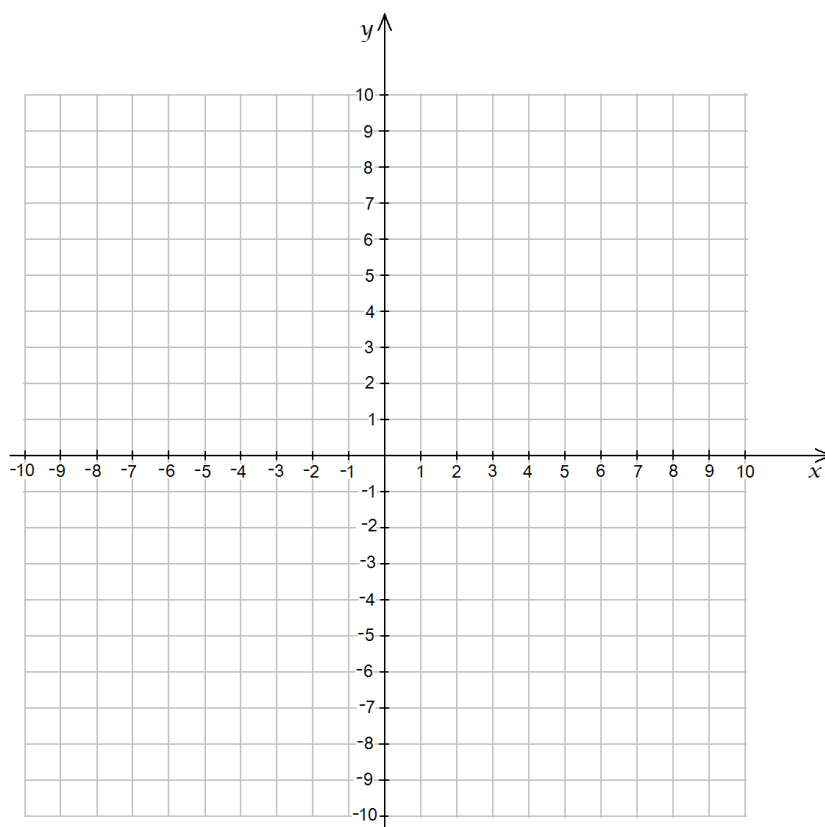
standard form: $y = \text{_____} \implies \text{vertex: } \text{_____}$

factored form: $y = \text{_____} \implies x$ -intercept(s): _____

- c) Find the coordinates of a few additional points and graph the equation.

Additional points:

x	y



2. Graph the parabola $y = x^2 + 6x + 5$. Compute the coordinates of at least five points on the parabola, including vertex and intercepts.

a) Factor $x^2 + 6x + 5$ by completing the square.

- b) Use your computation above to find each of the following.

polynomial form: $y = x^2 + 6x + 5 \implies y$ -intercept: _____

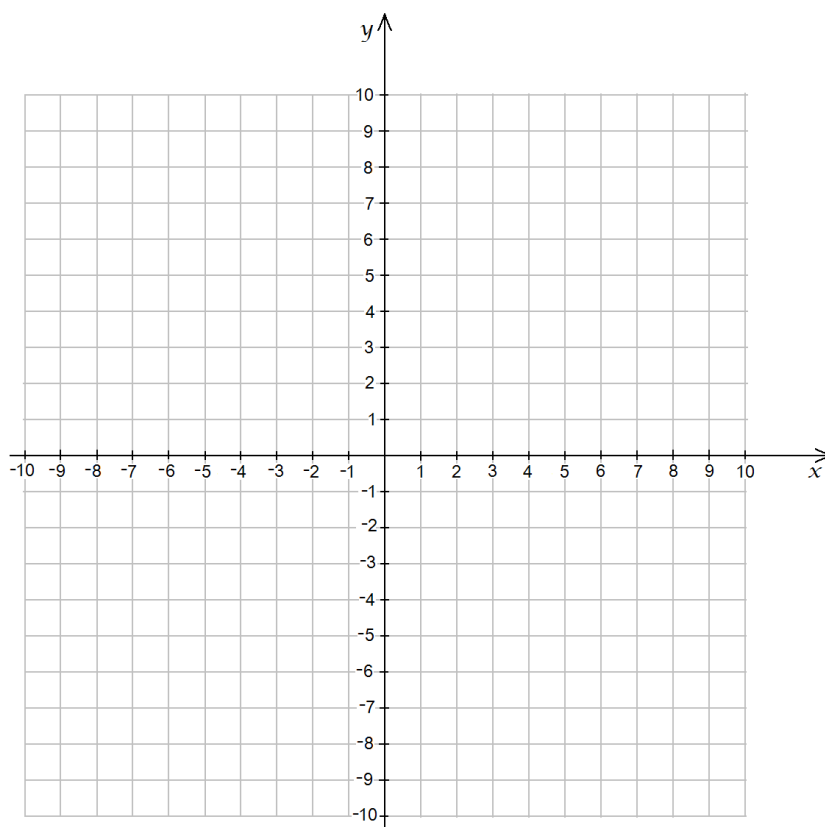
standard form: $y = \text{_____} \implies \text{vertex: } \text{_____}$

factored form: $y = \text{_____} \implies x$ -intercept(s): _____

- c) Find the coordinates of a few additional points and graph the equation.

Additional points:

x	y



3. Graph the parabola $y = x^2 - 4x + 3$. Compute the coordinates of at least five points on the parabola, including vertex and intercepts.

a) Factor $x^2 - 4x + 3$ by completing the square.

- b) Use your computation above to find each of the following.

polynomial form: $y = x^2 - 4x + 3 \implies y$ -intercept: _____

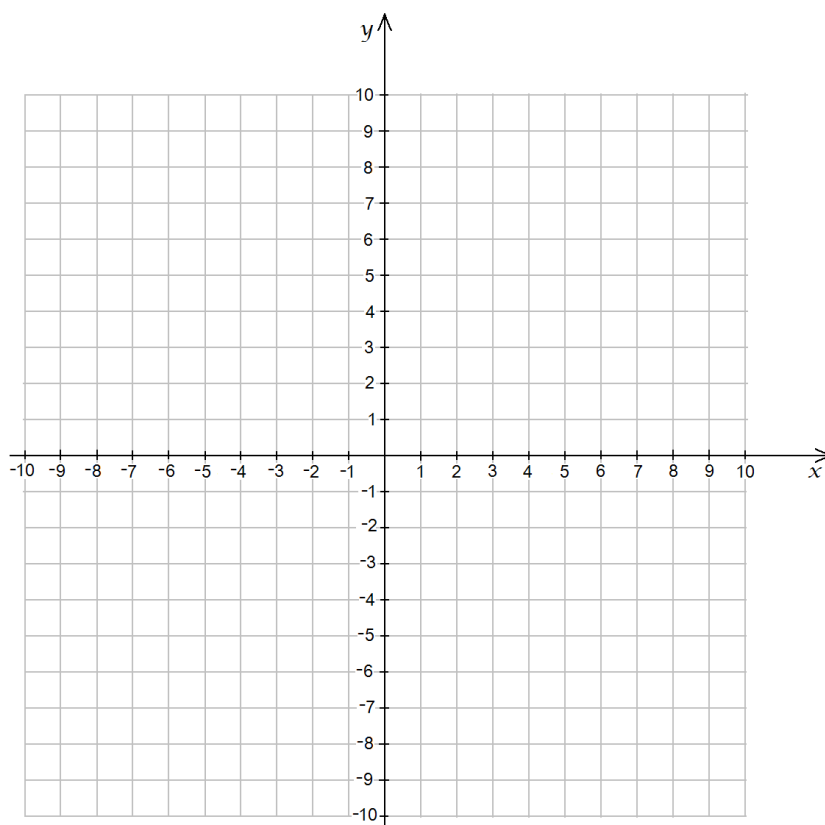
standard form: $y = \text{_____} \implies \text{vertex: } \text{_____}$

factored form: $y = \text{_____} \implies x$ -intercept(s): _____

- c) Find the coordinates of a few additional points and graph the equation.

Additional points:

x	y



4. Graph the parabola $y = x^2 + 4x - 1$. Compute the coordinates of at least five points on the parabola, including vertex and intercepts.

a) Factor $x^2 + 4x - 1$ by completing the square.

- b) Use your computation above to find each of the following.

polynomial form: $y = x^2 + 4x - 1 \implies y$ -intercept: _____

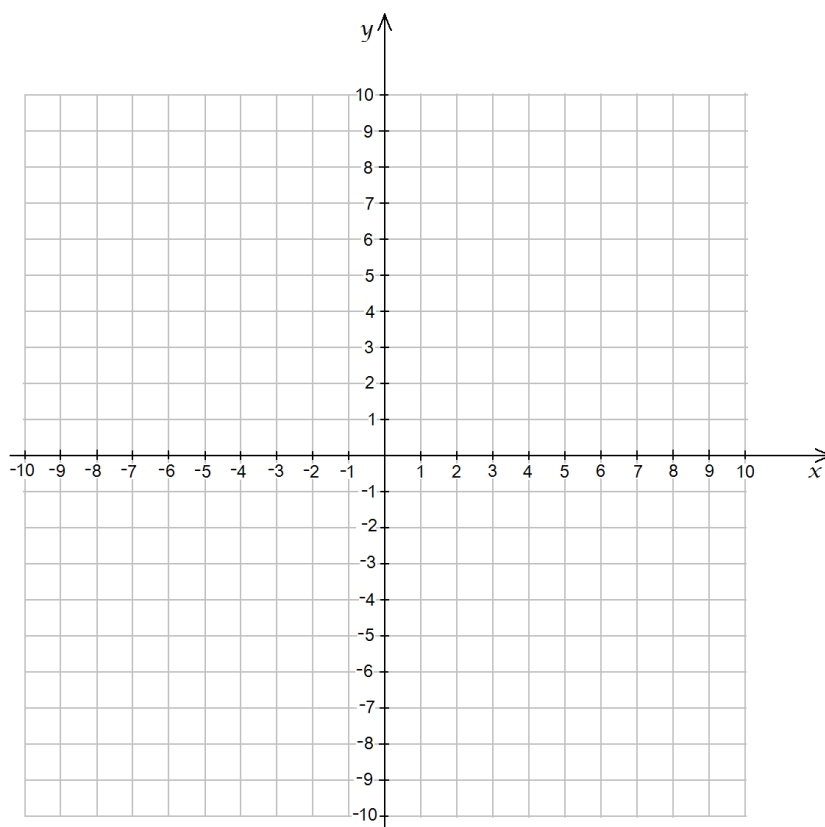
standard form: $y = \text{_____} \implies \text{vertex: } \text{_____}$

factored form: $y = \text{_____} \implies x$ -intercept(s): _____

- c) Find the coordinates of a few additional points and graph the equation.

Additional points:

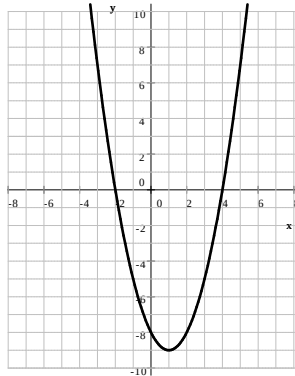
x	y



Answers

1. polynomial form: $y = x^2 - 2x - 8 \Rightarrow y$ -intercept: $(0, -8)$
 standard form: $y = (x - 1)^2 - 9 \Rightarrow$ vertex: $(1, -9)$
 factored form: $y = (x + 2)(x - 4) \Rightarrow x$ -intercepts: $(-2, 0)$ and $(4, 0)$

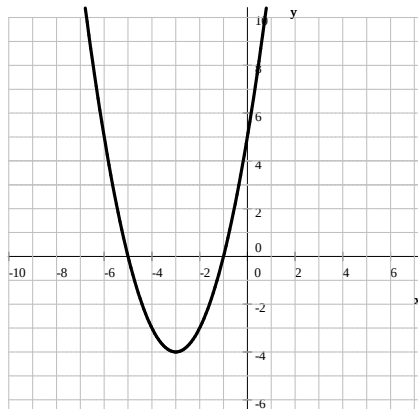
x	y
-3	7
-2	0
-1	-5
0	-8
1	-9 vertex
2	-8
3	-5
4	0



additional points: $(-3, 7)$,
 $(-1, -5)$, $(2, -8)$,
 $(3, -5)$, $(5, 7)$

2. polynomial form: $y = x^2 + 6x + 5 \Rightarrow y$ -intercept: $(0, 5)$
 standard form: $y = (x + 3)^2 - 4 \Rightarrow$ vertex: $(-3, -4)$
 factored form: $y = (x + 5)(x + 1) \Rightarrow x$ -intercepts: $(-5, 0)$ and $(-1, 0)$

x	y
-6	5
-5	0
-4	-3
-3	-4 vertex
-2	-3
-1	0
0	5

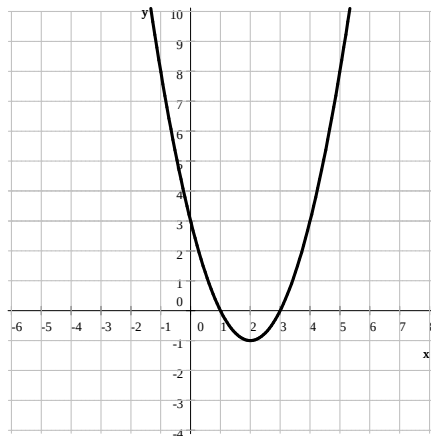


additional points: $(-6, 5)$,
 $(-4, -3)$, $(-2, -3)$, $(1, 12)$

3. polynomial form: $y = x^2 - 4x + 3 \Rightarrow y$ -intercept: $(0, 3)$
 standard form: $y = (x - 2)^2 - 1 \Rightarrow$ vertex: $(2, -1)$
 factored form: $y = (x - 1)(x - 3) \Rightarrow x$ -intercepts: $(1, 0)$ and $(3, 0)$

additional points: $(-1, 8)$,
 $(4, 3)$, $(5, 8)$, $(6, 15)$

x	y
-1	8
0	3
1	0
2	-1 vertex
3	0
4	3
5	8
6	15



4. polynomial form: $y = x^2 + 4x - 1 \Rightarrow y$ -intercept: $(0, -1)$

standard form: $y = (x + 2)^2 - 5 \Rightarrow$ vertex: $(-2, -5)$

factored form: $y = (x + 2 + \sqrt{5})(x + 2 - \sqrt{5})$
 $\Rightarrow x$ -intercepts: $(-2 - \sqrt{5}, 0)$ and $(-2 + \sqrt{5}, 0)$

additional points: $(-6, 12)$,
 $(-5, 4)$, $(-4, -1)$, $(-3, -4)$, $(2, 12)$,

x	y
-6	12
-5	4
-4	-1
-3	-4
-2	-5 vertex
-1	-4
-0	-1
1	4
2	12

