

Quadratic Equations and Vertex Form - Advanced

- 1** Remove the leading coefficient from the x terms to be ready to complete the square

$$y = 4x^2 + 24x + 38$$

A $y = 4(x^2 - 24x) + 38$ B $y = 4(x^2 + 6x) + 37$

C $y = 4(x^2 + 6x) + 40$ D $y = 4(x^2 - 6x) + 38$

E $y = 4(x^2 + 6x) + 38$

- 2** Remove the leading coefficient from the x terms to be ready to complete the square

$$y = -3x^2 + 18x - 25$$

A $y = -3(x^2 + 6x) - 25$ B $y = -3(x^2 - 18x) - 25$

C $y = -3(x^2 - 3x) - 25$ D $y = -3(x^2 - 7x) - 25$

E $y = -3(x^2 - 6x) - 25$

- 3** Complete the square to be ready to factor this polynomial

$$y = 4x^2 + 32x + 60$$

A $y = 4(x^2 + 8x + 16) + 69 + 60$ B $y = 4(x^2 + 8x + 16) - 64 + 60$

C $y = 4(x^2 + 8x + 16) + 62 + 60$ D $y = 4(x^2 + 8x + 15) - 64 + 60$

E $y = 4(x^2 + 8x + 16) + 64 + 60$

- 4** Complete the square to be ready to factor this polynomial

$$y = -2x^2 - 8x - 9$$

A $y = -2(x^2 + 4x + 4) - 8 - 9$ B $y = -2(x^2 + 4x + 4) + 12 - 9$

C $y = -2(x^2 - 1x + 4) + 8 - 9$ D $y = -2(x^2 + 4x - 0) + 8 - 9$

E $y = -2(x^2 + 4x + 4) + 8 - 9$

- 5** Solve the square polynomial to finish factoring

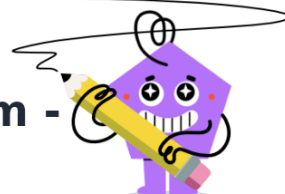
$$y = 4(x^2 - 6x + 9) - 36 + 35$$

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

B $y = -4(x - 3)^2 - 1$

C $y = 4(x - 3)^2 - 1$

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



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6 Solve the square polynomial to finish factoring

$$y = -2(x^2 + 4x + 4) + 8 - 6$$

A	$y = -2(x - 2)^2 - 2$
B	$y = -2(x - 2)^2 + 2$
C	$y = -2(x + 2)^2 - 2$
D	$y = -2(x + 2)^2 + 2$

7 Complete the square to factor this polynomial

$$y = x^2 + 6x + 7$$

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

8 Complete the square to factor this polynomial

$$y = -1x^2 + 2x$$

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

9 Complete the square to factor this polynomial

$$y = 3x^2 - 12x + 9$$

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

10 Complete the square to factor this polynomial

$$y = -4x^2 - 8x - 3$$

A	$y = -4(x + 1)^2 - 1$
B	$y = -4(x + 1)^2 + 1$
C	$y = -4(x - 1)^2 + 1$
D	$y = 4(x - 1)^2 - 1$

11 Complete the square and convert this to vertex form to find the vertex

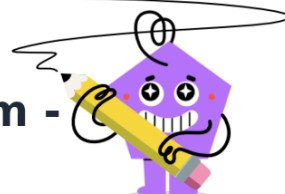
$$y = x^2 - 6x + 12$$

A	(3, 3)	B	(1, 3)
C	(3, -3)	D	(-3, 3)

12 Complete the square and convert this to vertex form to find the vertex

$$y = -1x^2 + 8x - 15$$

A	(-1, 4)	B	(1, 4)
C	(-1, 1)	D	(4, -1)
E	(4, 1)	F	(-4, 1)



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- 13** Complete the square and convert this to vertex form to find the vertex

$$y = 4x^2 - 16x + 13$$

A	(4, 2)	B	(4, -3)
C	(2, 3)	D	(-3, 2)
E	(2, -3)	F	(-2, -3)

- 14** Complete the square and convert this to vertex form to find the vertex

$$y = -3x^2 - 18x - 23$$

A	(-3, 4)	B	(-3, -3)
C	(4, -3)	D	(-3, -4)
E	(3, 4)		

- 15** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A	$x = \frac{4 \pm \sqrt{30}}{8}$	B	$x = \frac{4 \pm \sqrt{33}}{8}$
C	$x = \frac{4 \pm \sqrt{32}}{8}$	D	$x = \frac{4 \pm \sqrt{28}}{8}$

- 16** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A	$x = \frac{-1 \pm \sqrt{44}}{10}$	B	$x = \frac{-2 \pm \sqrt{44}}{14}$
C	$x = \frac{-2 \pm \sqrt{44}}{10}$	D	$x = \frac{-2 \pm \sqrt{47}}{10}$

- 17** What is the discriminant of this quadratic equation (use the discriminant formula)?

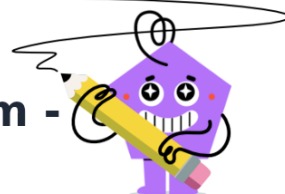
A	$\Delta = 24$
B	$\Delta = -24$
C	$\Delta = 0$

- 18** What is the discriminant of this quadratic equation (use the discriminant formula)?

A	$\Delta = -7$
B	$\Delta = 7$
C	$\Delta = 0$

- 19** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A	$x = \frac{1 \pm i\sqrt{39}}{-10}$	B	$x = \frac{3.9 \pm i\sqrt{3.2}}{2.9}$
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20 What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A

$$x = \frac{6.5 \pm i\sqrt{5.3}}{7.2}$$

B

$$x = \frac{1 \pm i\sqrt{15}}{-2}$$

21 What roots (solutions) would this quadratic equation have?

$$y = -x^2 - 4x - 2$$

A

$$x = \frac{4 \pm \sqrt{10}}{-2}$$

B

$$x = \frac{4 \pm \sqrt{8}}{-2}$$

C

$$x = \frac{4 \pm \sqrt{8}}{1}$$

D

$$x = \frac{4 \pm \sqrt{11}}{-2}$$

22 What roots (solutions) would this quadratic equation have?

$$y = -4x^2 + 1 + 2x$$

A

$$x = \frac{-3 \pm \sqrt{20}}{-8}$$

B

$$x = \frac{-2 \pm \sqrt{18}}{-8}$$

C

$$x = \frac{-2 \pm \sqrt{20}}{-8}$$

23 What is the discriminant of this quadratic equation?

$$y = -3x^2 - 3x - 4$$

A

$$\Delta = 39$$

B

$$\Delta = -39$$

C

$$\Delta = 0$$

24 What is the discriminant of this quadratic equation?

$$y = 4x^2 - 5x + 4$$

A

$$\Delta = 0$$

B

$$\Delta = 39$$

C

$$\Delta = -39$$

25 What roots (solutions) would this quadratic equation have?

$$y = -x^2 - x - 3$$

A

$$x = \frac{5 \pm i\sqrt{7.8}}{5.8}$$

B

$$x = \frac{1 \pm i\sqrt{11}}{-2}$$