

Completing The Square

Date _____ Period _____

Find the value that completes the square and then rewrite as a perfect square.

1) $y^2 + 4y + \underline{\hspace{1cm}}$

2) $a^2 - 40a + \underline{\hspace{1cm}}$

3) $n^2 + 6n + \underline{\hspace{1cm}}$

4) $x^2 + 24x + \underline{\hspace{1cm}}$

5) $r^2 + 3r + \underline{\hspace{1cm}}$

6) $x^2 - 11x + \underline{\hspace{1cm}}$

7) $x^2 + 5x + \underline{\hspace{1cm}}$

8) $y^2 + \frac{4}{9}y + \underline{\hspace{1cm}}$

Use completing the square to write the vertex form of the quadratic equation.

9) $y = x^2 + 8x + 18$

10) $y = x^2 + 4x$

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

$$12) y = x^2 + 8x + 13$$

$$13) y = 2x^2 + 16x + 30$$

$$14) y = x^2 + 6x + 11$$

$$15) y = x^2 + 6x + 13$$

$$16) y = -2x^2 - 16x - 28$$

Solve each equation by completing the square.

$$17) n^2 + 18n - 40 = 0$$

$$18) a^2 - 4a - 41 = 0$$

$$19) m^2 + 6m - 30 = 5$$

$$20) x^2 - 14x - 40 = 9$$

$$21) 4p^2 - 8p - 50 = -4$$

$$22) 10x^2 - 20x - 19 = -10$$

Answers to Completing The Square (ID: 1)

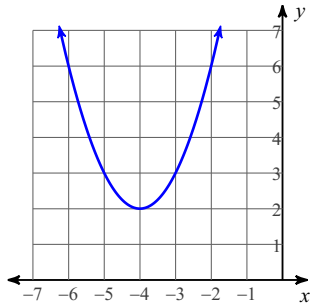
1) 4; $(y + 2)^2$

3) 9; $(n + 3)^2$

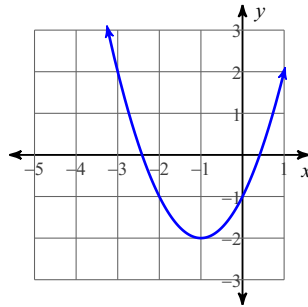
5) $\frac{9}{4}$; $\left(r + \frac{3}{2}\right)^2$

7) $\frac{25}{4}$; $\left(x + \frac{5}{2}\right)^2$

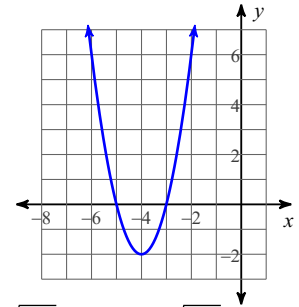
9)



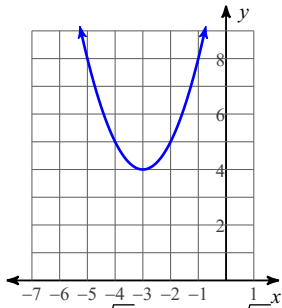
11)



13)



15)



17) $\{2, -20\}$

19) $\{-3 + 2\sqrt{11}, -3 - 2\sqrt{11}\}$

21) $\left\{ \frac{2 + 5\sqrt{2}}{2}, \frac{2 - 5\sqrt{2}}{2} \right\}$