

$a = 1$

Name: _____

Date: _____

Learning Goal 3.3

Convert standard form of the quadratic equation to vertex form by completing the square.

Assignment

Convert the following functions into vertex form of the equation.

$$\begin{aligned} \text{a. } a(x) &= x^2 - 8x + 10 \\ &= (x - 4)^2 - 6 \end{aligned}$$

$$\begin{aligned} \text{b. } b(x) &= x^2 - 10x + 3 \\ &= (x - 5)^2 - 22 \end{aligned}$$

$$\begin{aligned} \text{c. } c(x) &= x^2 + 12x + 15 \\ &= (x + 6)^2 - 21 \end{aligned}$$

$$\begin{aligned} \text{d. } d(x) &= x^2 + 16x + 5 \\ &= (x + 8)^2 - 59 \end{aligned}$$

$$\begin{aligned} \text{e. } y &= x^2 + 16x - 3 \\ &= (x + 8)^2 - 67 \end{aligned}$$

$$\begin{aligned} \text{f. } f(x) &= x^2 + 10x + 3 \\ &= (x + 5)^2 - 28 \end{aligned}$$

$$\begin{aligned} \text{g. } g(x) &= x^2 - 12x - 7 \\ &= (x - 6)^2 - 43 \end{aligned}$$

$$\begin{aligned} \text{h. } h(x) &= x^2 + 4x + 15 \\ &= (x + 2)^2 + 11 \end{aligned}$$

$$\begin{aligned} \text{i. } y &= x^2 - 6x + 11 \\ &= (x - 3)^2 + 2 \end{aligned}$$

$$\begin{aligned} \text{j. } j(x) &= x^2 - 14x + 5 \\ &= (x - 7)^2 - 44 \end{aligned}$$

$$\begin{aligned} \text{k. } k(x) &= x^2 + 11x + 10 \\ &= \left(x - \frac{11}{2}\right)^2 - \frac{81}{4} \end{aligned}$$

$$\begin{aligned} \text{l. } y &= x^2 - 3x + 12 \\ &= \left(x - \frac{3}{2}\right)^2 + \frac{39}{4} \end{aligned}$$

$$\begin{aligned} \text{m. } m(x) &= x^2 + 5x + 15 \\ &= \left(x + \frac{5}{2}\right)^2 + \frac{35}{4} \end{aligned}$$

$$\begin{aligned} \text{n. } n(x) &= x^2 - 7x - 5 \\ &= \left(x - \frac{7}{2}\right)^2 - \frac{69}{4} \end{aligned}$$

$$\begin{aligned} \text{o. } y &= x^2 + x + 9 \\ &= \left(x + \frac{1}{2}\right)^2 + \frac{35}{4} \end{aligned}$$

$$\begin{aligned} \text{p. } p(x) &= x^2 + 7x + 2 \\ &= \left(x + \frac{7}{2}\right)^2 - \frac{41}{4} \end{aligned}$$

$$\begin{aligned} \text{q. } q(x) &= x^2 - 5x + 1 \\ &= \left(x - \frac{5}{2}\right)^2 - \frac{21}{4} \end{aligned}$$

$$\begin{aligned} \text{r. } r(x) &= x^2 - 11x + 4 \\ &= \left(x - \frac{11}{2}\right)^2 - \frac{105}{4} \end{aligned}$$

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$$\begin{aligned} \text{s. } s(x) &= x^2 + 9x - 6 \\ &= \left(x + \frac{9}{2}\right)^2 - \frac{105}{4} \end{aligned}$$

$$\begin{aligned} \text{t. } t(x) &= x^2 - 13x + 20 \\ &= \left(x - \frac{13}{2}\right)^2 - \frac{89}{4} \end{aligned}$$