

Match each expression with its binomial factors. When you finish matching the factored form, then match the explanation that best describes why you matched the expressions as you did.

1) $x^2 - 64$ a) $(x + 8)^2$

2) $x^2 - 16x + 64$ b) $(x + 8)(x - 8)$

3) $x^2 + 16x + 64$ c) $(x - 16)(x + 4)$

4) $x^2 - 12x - 64$ d) $(x - 8)^2$

Factor the left expression of the equation completely, then determine if the right side is correctly factored form. If it is not, make the necessary corrections.

5) $9x^2 - 16 = (3x - 4)^2$

6) $4x^2 - 100 = (2x - 10)(2x + 10)$

7) $25x^2 - 40x + 16 = (5x - 4)^2$

Answers:

1) b

$$x^2 - 64$$

$$\boxed{(x-8)(x+8)}$$

$$\begin{array}{r} -64 \\ -8 \times 8 \\ 0 \end{array}$$

2) d

$$x^2 - 16x + 64$$

$$(x-8)(x-8)$$

$$\boxed{(x-8)^2}$$

$$\begin{array}{r} 64 \\ -8 \times -8 \\ -16 \end{array}$$

3) a

$$x^2 + 16x + 64$$

$$(x+8)(x+8) = \boxed{(x+8)^2}$$

$$\begin{array}{r} 64 \\ 8 \times 8 \\ 16 \end{array}$$

4) c

$$x^2 - 12x - 64$$

$$\begin{array}{r} 64 \\ -16 \times 4 \\ -12 \end{array}$$

$$\boxed{(x-16)(x+4)}$$

5) no $9x^2 - 16 = (3x-4)(3x+4)$

$$\sqrt{9x^2} \sqrt{16} \quad \boxed{(3x-4)(3x+4)}$$

6) no $4x^2 - 100 = 4(x^2 - 25) = 4(x+5)(x-5)$

$$4x^2 - 100 = 4(x^2 - 25)$$

$$= \boxed{4(x+5)(x-5)}$$

$$\begin{array}{r} -25 \\ -5 \times 5 \\ 0 \end{array}$$

7) yes

$$25x^2 - 40x + 16$$

slide and divide

$$x^2 - 40x + 400$$

$$\left(x - \frac{20}{25}\right) \left(x - \frac{20}{25}\right)$$

$$\begin{array}{r} 400 \\ -20 \times -20 \\ -40 \end{array}$$

divide by original leading coefficient

$$\left(x - \frac{4}{5}\right) \left(x - \frac{4}{5}\right)$$

$$(5x-4)(5x-4) = \boxed{(5x-4)^2}$$