Factoring Trinomials to Solve

Name_____ Period:_____ Date:_____

Directions: Use the information given to solve each problem.

1. Which of the following are factors of the equation when written in factored form? Select all that apply.

$$3x^2 - 7x - 6 = x^2 + x - 12$$

A. $x - 3$
B. $x + 4$
C. $3x - 4$
D. $3x + 2$
E. $x + 3$
F. $x - 4$

2. Which of the following are factors of the equation when written in factored form? Select all that apply.

$$2y^2 + 5y - 3 = y^2 + 2y - 1$$

A. $y + 1$
B. $y - 1$
C. $2y + 3$
D. $2y - 1$
E. $y + 3$
F. $y - 3$

3. Which of the following are factors of the equation when written in factored form? Select all that apply.

$$4z^2 - 10z - 6 = 2z^2 - 6z$$

A. $2z + 1$
B. $2z - 1$
C. $z + 3$
D. $z - 3$
E. $z + 1$
F. $z - 1$

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4. Which of the following are factors of the equation when written in factored form? Select all that apply.

$$5m^2 + 12m + 7 = 3m^2 + 5m + 1$$

A. $m - 3$
B. $m + 3$
C. $5m + 2$
D. $5m - 2$
E. $2m + 3$
F. $2m - 3$

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5. Which of the following are factors of the equation when written in factored form? Select all that apply.

$$6p^2 - 7p - 5 = 2p^2 + 3p - 1$$

A. $p + 1$
B. $p - 1$
C. $3p + 5$
D. $3p - 5$
E. $2p + 1$
F. $2p - 1$

Answer Key

Problem 1

$$3x^2 - 7x - 6 = x^2 + x - 12$$

1. Simplify the equation:

$$3x^2 - 7x - 6 - x^2 - x + 12 = 0$$

Combine like terms:

$$2x^2 - 8x + 6 = 0$$

2. Factorize $2x^2 - 8x + 6$:
Factor out the GCF (2):

$$2(x^2 - 4x + 3) = 0$$

Factorize $x^2 - 4x + 3$:

$$2(x - 3)(x - 1) = 0$$

Answer:

A. $x - 3$, **F.** $x - 1$

Problem 2

$$2y^2 + 5y - 3 = y^2 + 2y - 1$$

1. Simplify the equation:

$$2y^2 + 5y - 3 - y^2 - 2y + 1 = 0$$

Combine like terms:

$$y^2 + 3y - 2 = 0$$

2. Factorize $y^2 + 3y - 2$:
Find factors of -2 that sum to 3: 2 and -1.

$$(y + 2)(y - 1) = 0$$

Answer:

A. $y + 2$, **B.** $y - 1$

Problem 3

Solution

1. Simplify the equation:

$$4z^2 - 10z - 6 - 2z^2 + 6z = 0$$

   Combine like terms:

$$2z^2 - 4z - 6 = 0$$

2. Factorize $2z^2 - 4z - 6$:

   Factor out the GCF (2):

$$2(z^2 - 2z - 3) = 0$$

3. Factorize $z^2 - 2z - 3$:

   Find two numbers that multiply to -3 and add to -2: -3 and 1.

$$z^2 - 2z - 3 = (z - 3)(z + 1)$$

   Substitute back:

$$2(z - 3)(z + 1) = 0$$

Correct Answer:

D. $z - 3$, **E.** $z + 1$

Problem 4

1. Simplify the equation:

$$5m^2 + 12m + 7 - 3m^2 - 5m - 1 = 0$$

   Combine like terms:

$$2m^2 + 7m + 6 = 0$$

2. Factorize $2m^2 + 7m + 6$:

   Find two numbers that multiply to $2 \times 6 = 12$ and add to 7: 3 and 4.

$$(2m + 3)(m + 2) = 0$$

Correct Answer:

E. $2m + 3$, **B.** $m + 2$

Problem 5

$$6p^2 - 7p - 5 = 2p^2 + 3p - 1$$

1. Simplify the equation:

$$6p^2 - 7p - 5 - 2p^2 - 3p + 1 = 0$$

   Combine like terms:

$$4p^2 - 10p - 4 = 0$$

2. Factorize $4p^2 - 10p - 4$:

   Factor out the GCF (2):

$$2(2p^2 - 5p - 2) = 0$$

   Factorize $2p^2 - 5p - 2$:

$$2(2p + 1)(p - 2) = 0$$

Answer:

A. $p - 2$, **E.** $2p + 1$