SECTION 4.5 - FACTORING TRINOMIALS

REVIEW.

① SIMPLIFY:

(A) $(ab^4)(ab^2)$

(B) $(3ab^2)^3$

(C) $n(n^2-4n+3)$

(D) $\sqrt{45}$

② FIND EACH PRODUCT:

(A) $(a+2)(a+5)$

(B) $(d+4)(d+10)$

(C) $(x-1)(x+4)$

PART 1. FACTORING x^2+bx+c

WE HAVE LEARNED TO MULTIPLY TWO BINOMIALS USING THE "FOIL" METHOD. FOR EXAMPLE,

$$(x+3)(x+4) =$$

NOTICE THAT THE COEFFICIENT OF THE MIDDLE TERM, $7x$, IS THE SUM OF 3 AND 4, AND THE LAST TERM, 12, IS THE PRODUCT OF 3 AND 4.

WE WILL USE THIS FACT TO FACTOR TRINOMIAL, QUADRATIC EXPRESSIONS WITH A LEADING COEFFICIENT OF 1

EXAMPLE 1. FACTOR $x^2+9x+20$.

WE ASK THE QUESTION, "WHAT 2 NUMBERS MULTIPLY TO 20 AND ADD TO 9?"

EXAMPLE 2. FACTOR $x^2 + 8x + 15$

APPLICATION 1. FACTOR:

(A) $x^2 + 11x + 24$

(B) $9 + 10x + x^2$

EXAMPLE 3. FACTOR $x^2 - 8x + 12$

APPLICATION 2. FACTOR:

(A) $x^2 - 22x + 21$

(B) $w^2 - 11w + 28$

EXAMPLE 4. FACTOR $x^2 + 2x - 15$

EXAMPLE 5. FACTOR $x^2 - 7x - 18$

APPLICATION 3. FACTOR:

(A) $y^2 + 13y - 48$

(B) $r^2 - 2r - 24$

EXAMPLE 6. QUADRATIC EQUATIONS ARE WRITTEN IN THE FORM:

$$ax^2 + bx + c = 0.$$

WE WILL SOLVE EQUATIONS SUCH AS THESE BY FACTORING.

SOLVE: $x^2 + 6x = 27$

APPLICATION 4. SOLVE.

(A) $x^2 - 3x = 70$

(B) $x^2 + 3x - 18 = 0$

PRACTICE

(1) FACTOR:

(A) $x^2 + 14x + 24$

(B) $y^2 - 7y - 30$

(C) $n^2 + 4n - 21$

(D) $m^2 - 15m + 50$

(2) SOLVE EACH EQUATION:

(A) $x^2 - 4x - 21 = 0$

(B) $n^2 - 3n + 2 = 0$

(C) $x^2 - 15x + 54 = 0$

(D) $x^2 + 12x = -32$

(E) $x^2 - x - 72 = 0$

(F) $x^2 - 10x = -24$

(G) $x^2 - 7x + 12 = 0$

(H) $x^2 - 6x = 27$

(4)

Factoring Trinomials

Name: _____ **Date:** _____

1. What is the solution set of the equation $x^2 - 3x - 10 = 0$?

   A. $(5, -2)$ B. $(-5, -2)$

   C. $(5, 2)$ D. $(-5, 2)$

2. The solution set of $x^2 - 2x - 8 = 0$ is

   A. $\{4, -2\}$ B. $\{-4, 2\}$

   C. $\{-2, 8\}$ D. $\{6, 2\}$

3. What is the solution set of the equation $x^2 - 2x - 3 = 0$?

   A. $\{2, 1\}$ B. $\{2, -1\}$

   C. $\{-3, 0\}$ D. $\{3, -1\}$

4. The solution set of the equation $x^2 - x - 6 = 0$ is

   A. $\{6, -1\}$ B. $\{3, -2\}$

   C. $\{2, -3\}$ D. $\{-6, 1\}$

5. What is the solution set of $x^2 - x - 20 = 0$?

   A. $\{5, -4\}$ B. $\{-5, 4\}$

   C. $\{-10, 2\}$ D. $\{10, -2\}$

6. What is the solution set of the equation $x^2 - 3x - 4 = 0$?

   A. $\{-3, 1\}$ B. $\{4, -1\}$

   C. $\{-4, 1\}$ D. $\{3, -1\}$

7. Solve for the positive value of x: $x^2 + 4x - 21 = 0$

8. The solution set of $x^2 - 5x + 6 = 0$ is

   A. $\{1, 5\}$ B. $\{-1, -5\}$

   C. $\{2, 3\}$ D. $\{-2, -3\}$

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9. What is the solution set of the equation $x^2 + 2x - 15 = 0$?

A. $(3, -5)$ B. $(-3, 5)$

C. $(-3, -5)$ D. $(3, 5)$

10. What is the positive value of x in the equation $x^2 - x - 6 = 0$?

A. 1 B. 2 C. 3 D. 6

11. What is the solution set of the equation $x^2 - 7x - 18 = 0$?

A. $\{9, -2\}$ B. $\{-9, 2\}$

C. $\{-6, 3\}$ D. $\{6, -3\}$

12. What is the solution set of $y^2 - y - 12 = 0$?

A. $\{3, 4\}$ B. $\{3, -4\}$

C. $\{-12, 1\}$ D. $\{-3, 4\}$

13. What is the solution set for the equation $x^2 + 2x - 15 = 0$?

A. $\{3, 5\}$ B. $\{-3, 5\}$

C. $\{3, -5\}$ D. $\{-3, -5\}$

14. What is the solution set of the equation $x^2 - x - 6 = 0$?

A. $\{3, -2\}$ B. $\{-3, -2\}$

C. $\{-6, 1\}$ D. $\{3, 2\}$