

Factoring Review

Factor each polynomial and solve. Under the factors and circle the solutions.

Remember to find the GCF First!!!

Factor each polynomial and solve

1. $x^2 - 16x + 15 = 0$

2. $14x^2 = 2$

Factored Form: _____

Factored Form: _____

Solutions: _____

Solutions: _____

3. $2x^2 - x - 28 = 0$

4. $6x^3 + 15x^2 - 9x = 0$

Factored Form: _____

Factored Form: _____

Solutions: _____

Solutions: _____

5. $2x^2 + 16x = 40$

6. $9x^2 = 5$

Factored Form: _____

Factored Form: _____

Solutions: _____

Solutions: _____

7. $2x^2 - 98 = 0$

Factored Form: _____

Solutions: _____

8. $3x^2y - 6xy - 45y$

Factored Form: _____

9. $2x^2 = -8x + 42$

Factored Form: _____

Solutions: _____

10. $6bx^2 + 7bx + 2b$

Factored Form: _____

11. $4x^2 + 6x - 4 = 0$

Factored Form: _____

Solutions: _____

12. $12x^2 - 2x = 30$

Factored Form: _____

Solutions: _____

Key

Factoring Review

Factor each polynomial and solve. Under the factors and circle the solutions. Remember to find the GCF First!!!

Factor each polynomial and solve $\frac{-1}{-1} x \frac{-15}{-15} = 15$
 1. $x^2 - 16x + 15 = 0$ $\frac{-1}{-1} + \frac{-15}{-15} = -16$

$$\overbrace{x^2 - 1x} \quad \overbrace{-15x + 15}$$

$$x(x-1) - 15(x-1)$$

$$(x-15)(x-1) = 0$$

$$\begin{array}{l|l} x-15=0 & x-1=0 \\ x=15 & x=1 \end{array}$$

Factored Form: $(x-15)(x-1)$

Solutions: $x=1, x=15$

2. $14x^2 = 2$

$$14x^2 - 2 = 0$$

$$2(7x^2 - 1) = 0$$

$$7x^2 = 1$$

$$x^2 = \frac{1}{7}$$

$$x = \frac{1}{\sqrt{7}} = \pm \frac{\sqrt{7}}{7}$$

Factored Form: $2(7x^2 - 1)$

Solutions: $\pm \sqrt{7}/7$

3. $2x^2 - x - 28 = 0$ $\frac{-8}{-8} \times \frac{7}{7} = -56$
 $\frac{-8}{-8} + \frac{7}{7} = -1$

$$\overbrace{2x^2 - 8x} \quad \overbrace{+7x - 28}$$

$$2x(x-4) + 7(x-4)$$

$$(x-4)(2x+7) = 0$$

$$\begin{array}{l|l} x-4=0 & 2x+7=0 \\ \boxed{x=4} & 2x=-7 \\ & \boxed{x=-7/2} \end{array}$$

Factored Form: $(x-4)(2x+7)$

Solutions: _____

4. $\frac{6x^3}{3x} + \frac{15x^2}{3x} - \frac{9x}{3x} = 0$ $\frac{6}{6} \times \frac{1}{1} = -6$
 $\frac{6}{6} + \frac{1}{1} = 5$

$$3x(2x^2 + 5x - 3) = 0$$

$$\overbrace{2x^2 + 6x} \quad \overbrace{-1x - 3}$$

$$2x(x+3) - 1(x+3)$$

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

$$\begin{array}{l|l|l} 3x=0 & 2x-1=0 & x+3=0 \\ x=0 & x=1/2 & x=-3 \end{array}$$

Factored Form: $3x(2x-1)(x+3)$

Solutions: $x=0, x=1/2, x=-3$

5. $2x^2 + 16x = 40$ $\frac{-10}{-10} \times \frac{2}{2} = -20$
 $\frac{-10}{-10} + \frac{2}{2} = 8$

$$2(x^2 + 8x - 20) = 0$$

$$\overbrace{x^2 + 10x} \quad \overbrace{-2x - 20}$$

$$x(x+10) - 2(x+10)$$

Factored Form: $2(x-2)(x+10)$

Solutions: $x=2, x=-10$

6. $9x^2 = 5$

$$9x^2 - 5 = 0$$

$$x^2 = 5/9$$

$$\sqrt{x^2} = \pm \sqrt{5/9}$$

$$x = \pm \frac{\sqrt{5}}{3}$$

Factored Form: $9x^2 - 5$

Solutions: $x = \pm \sqrt{5}/3$

$$7. 2x^2 - 98 = 0$$

$$\frac{7}{7}x - \frac{7}{7} = -49$$

$$\frac{7}{7} + \frac{-7}{7} = 0$$

$$2(x^2 - 49) = 0$$

$$x^2 + 0x - 49$$

$$\sqrt{x^2 + 7x - 7x - 49}$$

$$x(x+7) - 7(x+7)$$

$$(x+7)(x-7) = 0$$

$$\text{Factored Form: } \underline{(x+7)(x-7)}$$

$$\text{Solutions: } \underline{x = 7, x = -7}$$

$$8. \frac{3x^2y}{3y} - \frac{6xy}{3y} - \frac{45y}{3y}$$

$$\frac{-5}{-5} \times \frac{3}{3} = -15$$

$$\frac{-5}{-5} + \frac{3}{3} = -2$$

$$3y(x^2 - 2x - 15)$$

$$\sqrt{x^2 - 5x + 3x - 15}$$

$$x(x-5) + 3(x-5)$$

$$3y(x-5)(x+3)$$

$$\text{Factored Form: } \underline{3y(x-5)(x+3)}$$

$$9. 2x^2 = -8x + 42$$

$$\frac{7}{7}x - \frac{3}{7} = -21$$

$$2x^2 + 8x - 42 = 0$$

$$\frac{7}{7} + \frac{-3}{7} = 4$$

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

$$\sqrt{x^2 + 7x - 3x - 21}$$

$$x(x+7) - 3(x+7)$$

$$2(x+7)(x-3)$$

$$\text{Factored Form: } \underline{2(x+7)(x-3)}$$

$$\text{Solutions: } \underline{x = -7, x = 3}$$

$$10. 6bx^2 + 7bx + 2b$$

$$\frac{4}{4} \times \frac{3}{3} = 12$$

$$\frac{4}{4} + \frac{3}{3} = 7$$

$$b(6x^2 + 7x + 2)$$

$$\sqrt{6x^2 + 4x + 3x + 2}$$

$$2x(3x+2) + 1(3x+2)$$

$$(3x+2)(2x+1)$$

$$\text{Factored Form: } \underline{(3x+2)(2x+1)}$$

$$11. 4x^2 + 6x - 4 = 0$$

$$\frac{4}{4}x - \frac{1}{4} = -4$$

$$\frac{4}{4} + \frac{-1}{4} = 3$$

$$2(2x^2 + 3x - 2)$$

$$\sqrt{2x^2 + 4x - 1x - 2}$$

$$2x(x+2) - 1(x+2)$$

$$2(x+2)(2x-1)$$

$$\text{Factored Form: } \underline{2(x+2)(2x-1)}$$

$$\text{Solutions: } \underline{x = -2, x = 1/2}$$

$$12. 12x^2 - 2x = 30$$

$$\frac{-10}{-10} \times \frac{9}{9} = -90$$

$$\frac{-10}{-10} + \frac{9}{9} = -1$$

$$12x^2 - 2x - 30$$

$$2(6x^2 - x - 15)$$

$$\sqrt{6x^2 - 10x + 9x - 15}$$

$$2x(3x-5) + 3(3x-5)$$

$$2(3x-5)(2x+3)$$

$$\text{Factored Form: } \underline{2(3x-5)(2x+3)}$$

$$\text{Solutions: } \underline{x = 5/3, x = -3/2}$$