

10.3 Solving in Factored Form

Zero Product Property

If $a(b) = 0$, then $a = 0$ or $b = 0$.Using the zero product property to solve equations.

$$(x - 6)(x + 5) = 0$$

$$(b - \frac{3}{4})(4b + 5) = 0$$

$$3x(2x - 4) = 6x^2 - 12x$$

Factor out a Greatest Common Factor (GCF)

$$15x + 20y$$

$$12y^2 - 21y$$

Solve by factoring

$$10x^2 - 15x = 0$$

$$6w^2 = 12w$$

You try:

Factor: $-2g^4 + 14g^2 + 6g$

Solve: $9y^2 = 15y$

SUMMARIZE YOUR NOTES:

PRACTICE PROBLEMS

DIRECTIONS: Solve the equation.		
1) $(x-5)(x+3)=0$	2) $(z - 13)(z - 14)=0$	3) $(d - 7)(d + \frac{4}{3}) = 0$
4) $(3n + 11)(n+1)=0$	5) $(2y + 5)(7y - 5)=0$	
Directions: Factor out the greatest common factor.		
6) $2x + 2y$	7) $3s^4 + 16s$	8) $7w^5 - 35w^2$

9) $15n^3 + 25n$	10) $v^3 - 5v^2 + 9v$	11) $6q^5 - 21q^4 - 15q^2$
Directions: Solve the equation.		
12) $b^2 + 6b = 0$	13) $-10n^2 + 35n = 0$	14) $18c^2 + 6c = 0$
15) $3k^2 = 6k$	16) $4s^2 = 10s$	17) $28m^2 = -8m$
Quick Review. Simplify each.		
1) $(2x^3 - 4x^2 + 6x) - (5x^3 - 2x^4 + x)$	2) $(2x - 3)(4x + 7)$	3) $(x - 7)(x + 7)$
Coming Up...		
Simplify 1. $\sqrt{(-4)^2 - 4(2)(-3)}$	Simplify 2. $4 + \sqrt{(-4)^2 - 4(2)(-3)}$	Simplify 3. $\frac{4 + \sqrt{(-4)^2 - 4(2)(-3)}}{2(2)}$

10-3 Application

1) Factor out the greatest common monomial factor.

$$12b^5 + 18b^4 - 30b^3$$

2) Solve.

$$-12h^2 = -30h$$

Directions for #3 and 4: A projectile is an object that is propelled into the air, but has no power to keep itself in the air, like a thrown ball. The height of a projectile can be described by the vertical motion model:

$s(t) = -16t^2 + vt + h$, where $s(t)$ represents the height of the projectile, t represents the time in seconds the object has been in the air, v is the initial velocity (in feet per second) and h is the initial height(in feet).

3) To catch a Frisbee, a dog leaps into the air with an initial velocity of 14 feet per second. (HINT: The dog started on the ground so his initial height, h , would be zero).

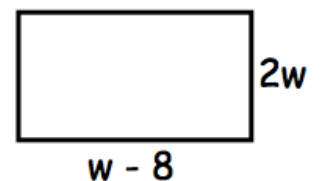
a. Write a model for the height of the dog above the ground.

b. After how many seconds does the dog land on the ground?

4) Your school's field goal kicker kicks the football with an initial vertical velocity of 70 feet per second. After how many seconds does the football land on the ground? (Again, the ball starts on the ground)

5) Use the rectangle at the right to answer the following questions.

a. Set up and simplify an expression to find the area of the rectangle.



b. If the area was equal to $8w$ solve to find the values of w .