

Alg II Factoring + Solving Review

09/19/2018

Assignment

Solve each equation by taking square roots.

1)

$$5n^2 + 8 = 53$$

$$5n^2 = 45$$

$$n^2 = 9$$

$$n = \pm 3$$

2)
$$-10 - 3v^2 = -22$$

$$-3v^2 = -12$$

$$v^2 = 4$$

$$v = \pm 2$$

3)

$$6 - 7n^2 = -57$$

$$-7n^2 = -63$$

$$n^2 = 9$$

$$n = \pm 3$$

4)

$$-10 - 9n^2 = -19$$

$$-9n^2 = -9$$

$$n^2 = 1$$

$$n = \pm 1$$

5)

$$5x^2 - 9 = 11$$

$$5x^2 = 20$$

$$x^2 = 4$$

$$x = \pm 2$$

6)
$$2 + 25p^2 = 27$$

$$25p^2 = 25$$

$$p^2 = 1$$

$$p = \pm 1$$

7)

$$3k^2 + 10 = 253$$

$$3k^2 = 243$$

$$k^2 = 81$$

$$k = \pm 9$$

8)

$$3n^2 - 7 = 236$$

$$3n^2 = 243$$

$$n^2 = 81$$

$$n = \pm 9$$

9)

$$5v^2 - 7 = 23$$

$$5v^2 = 30$$

$$v^2 = 6$$

$$v = \pm \sqrt{6}$$

10)

$$2x^2 - 7 = 145$$

$$2x^2 = 152$$

$$x^2 = 76$$

$$x = \pm \sqrt{76}$$

$$x = \pm \sqrt{4 \cdot 19}$$

$$x = \pm 2\sqrt{19}$$

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Assignment Cont'

$$11) \quad 2m^2 + 1 = 143$$

$$2m^2 = 142$$

$$m^2 = 71$$

$$m = \pm \sqrt{71}$$

$$12) \quad 8x^2 - 2 = 222$$

$$8x^2 = 224$$

$$x^2 = 28$$

$$x = \pm \sqrt{28}$$

$$x = \pm \sqrt{4} \cdot \sqrt{7}$$

$$x = \pm 2\sqrt{7}$$

$$13) \quad 4b^2 - 6 = -58$$

$$4b^2 = -52$$

$$b^2 = -13$$

$$b = \pm \sqrt{-13}$$

$$b = \pm i\sqrt{13}$$

$$14) \quad 3x^2 + 10 = -14$$

$$3x^2 = -24$$

$$x^2 = -8$$

$$x = \pm \sqrt{-8}$$

$$x = \pm \sqrt{4} \cdot \sqrt{-1} \cdot \sqrt{2}$$

$$x = \pm 2i\sqrt{2}$$

$$15) \quad 7x^2 - 2 = -135$$

$$7x^2 = -133$$

$$x^2 = -19$$

$$x = \pm \sqrt{-19}$$

$$16) \quad 6k^2 + 3 = -105$$

$$6k^2 = -108$$

$$k^2 = -18$$

$$k = \pm \sqrt{-18}$$

$$k = \pm \sqrt{9} \cdot \sqrt{-1} \cdot \sqrt{2}$$

$$k = \pm 3i\sqrt{2}$$

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17) $5(x-4)^2 = 125$

$(x-4)^2 = 25$

$x-4 = \pm 5$

$x = 4 \pm 5$

$x = -1$ or $x = 9$

18) $(x-3)^2 = 16$

$x-3 = \pm 4$

$x = 3 \pm 4$

$x = -1$ or $x = 7$

19) $3(x-4)^2 = 15$

$(x-4)^2 = 5$

$x-4 = \pm \sqrt{5}$

$x = 4 \pm \sqrt{5}$

20) $(x+1)^2 - 15 = -55$

$(x+1)^2 = -40$

$x+1 = \pm \sqrt{-40}$

$x+1 = \pm \sqrt{4 \cdot \sqrt{-1} \cdot \sqrt{10}}$

$x = -1 \pm 2i\sqrt{10}$

21) $6(x+3)^2 + 8 = -40$

$6(x+3)^2 = -48$

$(x+3)^2 = -8$

$x+3 = \pm \sqrt{-8}$

$x+3 = \pm \sqrt{4 \cdot \sqrt{-1} \cdot \sqrt{2}}$

$x = -3 \pm 2i\sqrt{2}$

22) $2(x+9)^2 - 4 = 28$

$2(x+9)^2 = 32$

$(x+9)^2 = 16$

$x+9 = \pm 4$

$x = -9 \pm 4$

$x = -13$ or $x = -5$

23) $(5x-1)^2 = 49$

$5x-1 = \pm 7$

$5x = 1 \pm 7$

$x = \frac{1 \pm 7}{5}$

$x = \frac{8}{5}$ or $x = \frac{-6}{5}$

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Review Unit 1B

3 terms

Factor

a=1

1)	$x^2 + 11x + 18$ PP	2)	$x^2 - 15x + 50$ m-m	3)	$x^2 + 4x - 12$ p-m
	$= (x+9)(x+2)$		$= (x-5)(x-10)$		$= (x+6)(x-2)$

4)	$x^2 - 6x - 91$	5)	$x^2 + 11x - 42$	6)	$x^2 + 2x - 24$
	$= (x+7)(x-13)$		$= (x+14)(x-3)$		$= (x+6)(x-4)$

2 terms

diff of squares

7)	$x^2 - 9$	8)	$x^2 - 121$	9)	$16x^2 - 25$
	$= (x+3)(x-3)$		$= (x+11)(x-11)$		$= (4x+5)(4x-5)$

3 terms

a ≠ 1

10)

$2x^2 + 3x - 9$	P(-18)	D(3)
$= (2x^2 - 3x) + (6x - 9)$		6-3
$= x(2x-3) + 3(2x-3)$		
$= (2x-3)(x+3)$		

11)

$5x^2 + 19x + 12$	P(60)	S(19)
$= (5x^2 + 4x) + (15x + 12)$		15+4
$= x(5x+4) + 3(5x+4)$		
$= (5x+4)(x+3)$		

12)

$2x^2 + 5x + 2$	P(4)	S(5)
$= (2x^2 + 1x) + (4x + 2)$		4+1
$= x(2x+1) + 2(2x+1)$		
$= (2x+1)(x+2)$		

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Review Unit 1B cont'

$$\begin{array}{l} 13) \quad 5n^2 - 18n + 9 \quad \begin{array}{l} P(45) \\ S(-18) \end{array} \\ = (5n^2 - 3n) + (-15n + 9) \\ = n(5n - 3) - 3(5n - 3) \\ = (5n - 3)(n - 3) \end{array}$$

$$\begin{array}{l} 14) \quad 5x^2 + 9x - 2 \quad \begin{array}{l} P(-10) \\ D(9) \end{array} \\ = (5x^2 - 1x) + (10x - 2) \\ = x(5x - 1) + 2(5x - 1) \\ = (5x - 1)(x + 2) \end{array}$$

$$\begin{array}{l} 15) \quad 5x^2 - 12x + 4 \quad \begin{array}{l} P(20) \\ S(-12) \end{array} \\ = (5x^2 - 2x) + (-10x + 4) \\ = x(5x - 2) - 2(5x - 2) \\ = (5x - 2)(x - 2) \end{array}$$

Solving Quadratics: By Factoring.

$$\begin{array}{l} 16) \quad x^2 + 3x - 28 = 0 \\ (x + 7)(x - 4) = 0 \\ x + 7 = 0 \quad \text{or} \quad x - 4 = 0 \\ x = -7 \quad x = 4 \end{array}$$

$$\begin{array}{l} 17) \quad 16x^2 - 25 = 0 \\ (4x + 5)(4x - 5) = 0 \\ 4x + 5 = 0 \quad \text{or} \quad 4x - 5 = 0 \\ x = -5/4 \quad x = 5/4 \end{array}$$

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Solving Quadratics: By Factoring Cont'

18) $2x^2 + 11x + 12 = 0$ $P(24) | S(11)$
 $(2x^2 + 3x) + (8x + 12) = 0$ $8 + 3$
 $x(2x + 3) + 4(2x + 3) = 0$
 $(2x + 3)(x + 4) = 0$
 $2x + 3 = 0$ or $x + 4 = 0$
 $x = -3/2$ $x = -4$

19) $3x^2 - 7x - 6 = 0$ $P(-18) | D(-7)$
 $(3x^2 + 2x) + (-9x - 6) = 0$ $2 - 9$
 $x(3x + 2) - 3(3x + 2) = 0$
 $(3x + 2)(x - 3) = 0$
 $3x + 2 = 0$ or $x - 3 = 0$
 $x = -2/3$ $x = 3$

Solving Quadratics: By the Quadratic Formula

20) $3x^2 - 2x + 1 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $a = 3$ $b = -2$ $c = 1$
 $-b = -(-2)$
 $-b = 2$
 $b^2 = (-2)^2 = 4$
 $NOT -4$
 $= \frac{2 \pm \sqrt{4 - 4(3)}}{6}$
 $= \frac{2 \pm \sqrt{-8}}{6}$
 $= \frac{2 \pm \sqrt{4} \cdot \sqrt{-1} \cdot \sqrt{2}}{6}$
 $= \frac{2 \pm 2i\sqrt{2}}{6} = \frac{1 \pm i\sqrt{2}}{3}$

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Solving Quadratics: By the Quadratic Formula

21) $4x^2 - 4x + 1 = 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a=4 \quad b=-4 \quad c=1$

$-b = -(-4)$

$-b = 4$

$b^2 = (-4)^2 = 16$

NOT -16

$$= \frac{4 \pm \sqrt{16 - 4(4)}}{8}$$

$$= \frac{4 \pm \sqrt{0}}{8}$$

$$= \frac{4}{8} = \frac{1}{2}$$

22) $x^2 + 6x - 12 = 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a=1 \quad b=6 \quad c=-12$

$-b = -(6)$

$-b = -6$

$b^2 = (6)^2$

$b^2 = 36$

$$= \frac{-6 \pm \sqrt{36 - 4(-12)}}{2}$$

$$= \frac{-6 \pm \sqrt{84}}{2}$$

$$= \frac{-6 \pm \sqrt{4} \sqrt{21}}{2}$$

$$= \frac{-6 \pm 2\sqrt{21}}{2}$$

$$= -3 \pm \sqrt{21}$$

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$$23) (x-2)^2 + 16 = 0$$

$$(x-2)^2 = -16$$

$$x-2 = \pm 4i$$

$$x = 2 \pm 4i$$

$$24) 3x^2 + 12 = 87$$

$$3x^2 = 75$$

$$x^2 = 25$$

$$x = \pm 5$$