

REVIEW Ditto #2 Solving Quadratic Equations Quiz

Solve.

$$1) 2x^2 - 128 = 0$$

$$2(x^2 - 64) = 0$$

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

$x = 8$
 $x = -8$

$$2) (a - 25)^2 = 9$$

$$a - 25 = \pm 3$$

$$a = 25 \pm 3$$

$a = 28$
 $a = 22$

Solve by completing the square.

$$3) x^2 - 4x - 77 = 0$$

$$x^2 - 4x + 4 = 77 + 4$$

$$(x-2)^2 = 81$$

$$x-2 = \pm 9$$

$$x = 2 \pm 9$$

$x = 11$
 $x = -7$

$$4) 2x^2 - 12x + 14 = 0$$

$$\frac{2x^2 - 12x + 14}{2} = \frac{0}{2}$$

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

$$x^2 - 6x + 9 = -7 + 9$$

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

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

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

$$5) c^2 - 10c - 20 = 0$$

$$c^2 - 10c + 25 = 20 + 25$$

$$(c-5)^2 = 45$$

$$c-5 = \pm \sqrt{45}$$

$$c-5 = \pm 3\sqrt{5}$$

$c = 5 \pm 3\sqrt{5}$

Solve by using the quadratic formula

$$6) 5z^2 = -2 - 11z$$

$$5z^2 + 11z + 2 = 0$$

$a = 5$
 $b = 11$
 $c = 2$

$$x = \frac{-11 \pm \sqrt{11^2 - 4(5)(2)}}{2(5)} = \frac{-11 \pm \sqrt{121 - 40}}{10}$$

$$x = \frac{-11 \pm \sqrt{81}}{10} = \frac{-11 \pm 9}{10}$$

$x = \frac{-1}{5}$ $x = -2$

$$7) -3 - 10y^2 - y = 0$$

$$-10y^2 - y - 3 = 0$$

$a = -10$
 $b = -1$
 $c = -3$

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(-10)(-3)}}{2(-10)} = \frac{1 \pm \sqrt{1 - 120}}{-20}$$

$$x = \frac{1 \pm \sqrt{-119}}{-20} = \frac{1 \pm i\sqrt{119}}{-20} \text{ OR } \frac{-1 \pm -\sqrt{119}i}{20}$$

$$b^2 - 4ac = (-3)^2 - 4(2)(-2)$$

$$9 + 16 = 25 > 0$$

9) Give the value of the discriminant of $2x^2 - 3x - 2 = 0$

$$a=2 \quad b=-3 \quad c=-2$$

2 different real roots

How many and what type of roots does the equation have?

10) How many real roots does the equation $x^2 + 2x + 5 = 0$ have?

$$a=1 \quad b=2 \quad c=5$$

$$\text{Discriminant} = 2^2 - 4(1)(5)$$

$$4 - 20 = -16 < 0$$

No real roots

2 imaginary conjugate roots

Solve by any method.

11) ~~$\frac{4x-3}{2x-3} = \frac{5x-3}{x+1}$~~ $(4x-3)(x+1) = (5x-3)(2x-3)$

$$4x^2 + x - 3 = 10x^2 - 21x + 9$$

$$3x^2 - 11x + 6 = 0$$

$$\frac{6x^2 - 22x + 12}{2} = 0$$

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

$$x = \frac{2}{3} \quad x = 3$$

12) $9(x-4)^2 + 4(x-4) = 0$

$$9(x-4) + 4 = 0$$

$$9x - 36 + 4 = 0$$

$$9x = 32$$

$$x = \frac{32}{9}$$

loss + root
 $x-4=0$
 $x=4$

13) $\sqrt{(3x-5)^2} = \sqrt{(8x+3)^2}$

$$3x-5 = 8x+3$$

$$5x = 8$$

$$x = \frac{8}{5}$$

$$9x^2 - 30x + 25 = 64x^2 + 48x + 9$$

$$55x^2 + 78x - 16 = 0$$

$$-(3x-5) = 8x+3 \quad (5x+8)(11x-2) = 0$$

$$11x = 2$$

$$x = \frac{2}{11}$$

$$x = \frac{-8}{5} \quad x = \frac{2}{11}$$

14) $y-2 = \frac{3y-2}{2y}$

$$2y(y-2) = 3y-2$$

$$2y^2 - 4y = 3y-2$$

$$2y^2 - 7y + 2 = 0$$

$$x = \frac{7 \pm \sqrt{33}}{4}$$

15) $(\sqrt{3r+1})^2 = (2r-6)^2$

$$3r+1 = 4r^2 - 24r + 36$$

$$4r^2 - 27r + 35 = 0$$

$$r = 5$$