Name Key

Algebra II Practice Quiz 6.5

Solve each equation by using the quadratic formula.

1. $x^2 - 4x - 21 = 0$ 7, -3

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

$a = 1$
$b = -4$
$c = -21$

$$= \frac{4 \pm \sqrt{(-4)^2 - 4(1)(-21)}}{2(1)}$$

$$= \frac{4 \pm \sqrt{100}}{2}$$

$$= \frac{4 \pm 10}{2}$$

$$= \frac{4+10}{2} = \frac{14}{2} = 7$$

$$\frac{4-10}{2} = \frac{-6}{2} = -3$$

$\frac{-10 \pm 2\sqrt{3}}{4}$ or $\frac{-5 \pm \sqrt{3}}{2}$

2. $2x^2 + 10x + 11 = 0$

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

$a = 2$
$b = 10$
$c = 11$

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

$= \frac{-10 \pm \sqrt{12}}{4}$

$\sqrt{4}\sqrt{3} = 2\sqrt{3}$

$= \frac{-10 \pm 2\sqrt{3}}{4}$

$= \frac{-5 \pm \sqrt{3}}{2}$

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

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

$a = 9$
$b = -6$
$c = 1$

$$x = \frac{6 \pm \sqrt{(-6)^2 - 4(9)(1)}}{2(9)}$$

$$= \frac{6 \pm \sqrt{0}}{18} = \frac{6}{18} = \frac{1}{3}$$

$$\frac{6 \pm 0}{18} =$$

4. $x^2 + 81 = 0$ $\pm 9i$

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

$a = 1$
$b = 0$
$c = 81$

$= \frac{0 \pm \sqrt{0^2 - 4(1)(81)}}{2(1)}$

$= \frac{0 \pm \sqrt{-324}}{2}$ $\sqrt{-1}\sqrt{324}$ $= \frac{\pm 18i}{2} = \pm 9i$

$\frac{-3 \pm \sqrt{33}}{2}$

5. $x^2 + 3x - 6 = 0$

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

$a = 1$
$b = 3$
$c = -6$

$= \frac{-3 \pm \sqrt{3^2 - 4(1)(-6)}}{2(1)}$

$= \frac{-3 \pm \sqrt{33}}{2}$

A. Find the value of the discriminant

B. Describe the number and type of root (2 rational roots, 2 irrational roots, 1 rational root, 2 complex roots)

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

A. 21

B. 2 irrational roots

$b^2 - 4ac$

$a = 1$

$b = 3$

$c = -3$

$3^2 - 4(1)(-3)$

21

7. $6x^2+3x+6=0$

b^2-4ac

$a=6$
$b=3$
$c=6$

$3^2-4(6)(6)$

-135

A. -135

B. 2 complex roots

8. $4x^2 + 20x + 25 = 0$

$b^2 - 4ac$

$a = 4$
$b = 20$
$c = 25$

$20^2 - 4(4)(25)$

0

A. 0

B. 1 rational root

9. $-12x^2+5x+2=0$

b^2-4ac

$a=-12$

$b=5$

$c=2$

$5^2-4(-12)(2)$

121

A. 121

B. 2 rational roots

10. $x^2+9x+13=0$

b^2-4ac

$a=1$
$b=9$
$c=13$

$9^2-4(1)(13)$

29

A. 29

B. 2 irrational roots