

Name: Key Date: \_\_\_\_\_

**Review Solving - Factoring, Square Roots and Completing the Square**

1.  $x^2 - x - 56 = 0$  \* Factor \*

$x = 8, -7$

2.  $x^2 - 10 = 38$  \* Sq. Root \*

$x = \pm 4\sqrt{3}$

3.  $x^2 + 6x + 3 = 0$  \* CTS \*

$x = -3 \pm \sqrt{6}$

4.  $(x-5)^2 - 3 = 42$  \* Sq. Root \*

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

5.  $2x^2 - 3x = 9$  \* Factor \*

$x = -\frac{3}{2}, 3$

6.  $2x^2 + 2x + 9 = x^2$  \* CTS \*

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

**Discriminant and Simplifying the Quadratic Formula**

Find the discriminant of each quadratic equation. State the number and type of solutions.

7.  $-x^2 - 2x - 10 = -9$   $a = -1$   $b = -2$   
 $c = -1$

$0$  1 real

8.  $-9n^2 - 6n - 6 = -5$   $a = -9$   $b = -6$   
 $c = -1$

$0$  1 real

9.  $-8k^2 + 3k - 3 = 0$   $a = -8$   $b = 3$   
 $c = -3$

$-87$  2 imaginary

10.  $-3a^2 - 2 = -7a$   $a = -3$   $b = 7$   
 $c = -2$

$25$  2 real

11.  $-3b^2 - 4b - 3 = -7$   $a = -3$   $b = -4$   
 $c = 4$

$64$  2 real

12.  $-6m^2 = 8m + 7$   $a = 6$   $b = 8$   
 $c = 7$

$-104$  2 imaginary

**\* Must show work! \***

~ Answers only are shown ~

Simplify the following expressions.

13.  $\frac{4 \pm \sqrt{81}}{3}$  ← Perfect Square

$$\boxed{\frac{13}{3}, \frac{5}{3}}$$

14.  $\frac{-5 \pm \sqrt{-36}}{3}$

$$\boxed{-\frac{5}{3} \pm 2i}$$

Simplify the following expressions.

15.  $\frac{10 \pm \sqrt{50}}{15}$

$$\boxed{\frac{2}{3} \pm \frac{\sqrt{2}}{3}}$$

16.  $\frac{-2 \pm \sqrt{-48}}{4}$

$$\boxed{-\frac{1}{2} \pm i\sqrt{3}}$$

17.  $\frac{-3 \pm \sqrt{41}}{9}$

$$\boxed{-\frac{1}{3} \pm \frac{\sqrt{41}}{9}}$$

18.  $\frac{4 \pm \sqrt{-9}}{9}$

$$\boxed{\frac{4}{9} \pm \frac{i}{3}}$$

19.  $\frac{2 \pm 4\sqrt{13}}{12}$

$$\boxed{\frac{1}{6} \pm \frac{\sqrt{13}}{3}}$$

20.  $\frac{6 \pm 2\sqrt{12}}{8}$

$$\boxed{\frac{3}{4} \pm \frac{\sqrt{3}}{2}}$$

21.  $\frac{-3 \pm \sqrt{-30}}{9}$

$$\boxed{-\frac{1}{3} \pm \frac{i\sqrt{30}}{9}}$$

22.  $\frac{5 \pm \sqrt{125}}{5}$

$$\boxed{1 \pm \sqrt{5}}$$