

**ANSWERS!**

**DIRECTIONS:** For #1-2, solve by **completing the square**. Write the solutions in the provided blanks. Show all work.

1.  $x^2 + 18x + 74 = 0$

2.  $2y^2 - 12y + 50 = 0$

$$x = -9 \pm \sqrt{7}$$

$$y = 3 \pm 4i$$

**DIRECTIONS:** For #3-4, solve by **using the quadratic formula**. Write the solutions in the provided blanks. Show all work.

3.  $3y^2 - 8y + 6 = 0$

4.  $r^2 - 4r - 8 = 0$

$$y = \frac{4}{3} \pm \frac{\sqrt{2}}{3} i$$

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

DIRECTIONS: For #5-6, use the **discriminant** to describe the **nature of the roots/solutions**. Write your answers in the provided blanks. Show all work.

5.  $-3w^2 - 8w + 7 = 0$

6.  $4x^2 - 6x + 5 = 0$

**2 real solutions**

**2 imaginary solutions**

DIRECTIONS: For #7-16, solve by **any mathematical method**. Write the solutions in the provided blanks. Show all work.

7.  $w^2 + 14w - 32 = 0$

8.  $-6(m + 5)^2 = 96$

**$w = -16, 2$**

**$m = -5 \pm 4i$**

**9.**  $24 = 6n - n^2$

**10.**  $3x^2 + 20 = 2x^2 + 4x$

$$n = 3 \pm i\sqrt{15}$$

$$x = 2 \pm 4i$$

**11.**  $3y^2 - 6y + 10 = 0$

**12.**  $4(3x - 2)^2 + 5 = 33$

$$y = 1 \pm \frac{\sqrt{21}}{3} i$$

$$x = \frac{2}{3} \pm \frac{\sqrt{7}}{3}$$

**13.**  $p^2 - 8p = -6$

$$p = 4 \pm \sqrt{10}$$

**14.**  $\frac{4d^2+1}{4} = 3d$

$$d = \frac{3}{2} \pm \sqrt{2}$$

**15.**  $x - 2\sqrt{x} - 15 = 0$

$$x = 25$$

(You got two answers.... but only one of them works!)

**16.**  $(2x + 1)^2 + 3(2x + 1) - 10 = 0$

$$x = \frac{1}{2}, -3$$

DIRECTIONS: For #17, write a two- or three-sentence response to the questions.

- 17.** Select a test problem number from #7-16. What mathematical method did you select to solve for the variable? Explain why you chose this method.

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