

# A1 Unit 6 Part 2 Assessment Retake Review Sheet

In numbers 1-3, simplify the expression.

1.  $\sqrt{96}$

$$\sqrt{16 \cdot 6} = 4\sqrt{6}$$

2.  $\sqrt{50}$

$$\sqrt{25 \cdot 2} = 5\sqrt{2}$$

3.  $4\sqrt{18}$

$$4 \cdot 3\sqrt{2} = 12\sqrt{2}$$

In numbers 4-9, find the value of the discriminant and tell if the equation has *two solutions*, *one solution*, or *no real solution*. Then solve using the quadratic formula or factoring.

4.  $0 = x^2 - x - 7$

$$(-1)^2 - 4(1)(-7) = 29 \quad \text{2 sol}$$

$$x = \frac{1 \pm \sqrt{29}}{2} \rightarrow \begin{cases} 3.19 \\ -2.19 \end{cases}$$

5.  $0 = x^2 - 6x + 8$

$$(-6)^2 - 4(1)(8) = 4 \quad \text{2 sol}$$

$$0 = (x-4)(x-2)$$

$$x = 4, 2$$

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

$$(-6)^2 - 4(2)(3) = 12 \quad \text{2 sol}$$

$$x = \frac{6 \pm \sqrt{12}}{4} = \frac{6 \pm 2\sqrt{3}}{4} = \frac{3 \pm \sqrt{3}}{2}$$

$$\rightarrow \begin{cases} 2.366 \\ .634 \end{cases}$$

7.  $0 = x^2 + 10x + 15$

$$10^2 - 4(1)(15) = 40 \quad \text{2 sol}$$

$$100 - 60 = 40$$

$$x = \frac{-10 \pm \sqrt{40}}{2} = \frac{-10 \pm 2\sqrt{10}}{2} = -5 \pm \sqrt{10}$$

$$\rightarrow \begin{cases} -1.84 \\ -8.16 \end{cases}$$

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

$$4^2 - 4(1)(4) = 0 \quad \text{1 sol}$$

$$16 - 16 = 0$$

$$x = \frac{-4 \pm \sqrt{0}}{2} = \frac{-4}{2} = -2$$

9.  $13 = x^2 - 2x$

$$0 = x^2 - 2x - 13$$

$$(-2)^2 - 4(1)(-13) = 56$$

$$x = \frac{2 \pm \sqrt{56}}{2} = 1 \pm \sqrt{14}$$

$$\rightarrow \begin{cases} 4.74 \\ -2.74 \end{cases}$$

10. Identify the roots in the following quadratic equation  $0 = x^2 - 7x - 11$

$$(-7)^2 - 4(1)(-11) = 93$$

$$x = \frac{7 \pm \sqrt{93}}{2} \rightarrow \begin{cases} 8.3 \\ -1.3 \end{cases}$$

11. Identify the solution set to the following equation.  $\sqrt{72} = (x-5)^2$

$$\pm\sqrt{72} = x-5$$

$$5 \pm \sqrt{72} = x$$

$$13.5 \text{ or } -3.5$$

$$5 \pm 6\sqrt{2}$$

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12. Solve the following quadratic equation using completing the square.  $0 = x^2 - 6x + 4$

$$\boxed{x = .764 \\ 5.24}$$

$$\begin{aligned} -4 + +9 &= x^2 - 6x + 9 \\ \sqrt{5} &= \sqrt{(x-3)^2} \\ \pm\sqrt{5} &= x-3 \\ 3 \pm \sqrt{5} &= x \end{aligned}$$

13. Rewrite the following quadratic function in vertex form.  $y = x^2 - 4x + 5$

$$\begin{aligned} y-5 &= x^2 - 4x + 4 \\ +4 & \\ y-1 &= (x-2)^2 + 1 \\ +1 & \end{aligned}$$

$$\boxed{y = (x-2)^2 + 1}$$

14. Tom Brady throws a football from 6 feet above the ground with an initial velocity of 38 feet per second.  
(Vertical Motion Model:  $h = -16t^2 + vt + s$ )

- If no one catches the ball, after how many seconds is the ball in the air.
- If a teammate jumps to catch the ball at a height of 8 feet, how long is the ball in the air?

$$\begin{aligned} \textcircled{a} \quad 0 &= -16t^2 + 38t + 6 \\ 38^2 - 4(-16)(6) & \\ 1828 & \\ x &= \frac{-38 \pm \sqrt{1828}}{2(-16)} = 2.5 \end{aligned}$$

$$\begin{aligned} \textcircled{b} \quad 8 &= -16t^2 + 38t + 6 \\ -8 & \\ 0 &= -16t^2 + 38t - 2 \\ (38^2 - 4(-16)(-2)) & \\ 1316 & \\ x &= \frac{-38 \pm \sqrt{1316}}{-32} = 2.32 \end{aligned}$$

Look for a pattern in each table of values to determine which model best describes the data. Then write an equation for the function that models the data.

15.

x	-3	-1	1	3	5
y	-5	-2	1	4	7

+3 +3 +3 +3

linear

$$\frac{1+2}{1+1} = \frac{3}{2}$$

$$y-1 = \frac{3}{2}(x-1)$$

$$y = \frac{3}{2}x - \frac{3}{2} + 1$$

$$\boxed{y = \frac{3}{2}x - \frac{1}{2}}$$