

Algebra 2  
 Standard Skills Practice  
 Semester 1 - 2<sup>nd</sup> Quarter

Name \_\_\_\_\_  
 Date \_\_\_\_\_ Per \_\_\_\_\_

All answers must be exact and in simplest form unless stated otherwise. All problems should be completed WITHOUT a calculator.

1. Find  $(f + g)(2)$  for  $f(x) = 5x$ ;  $g(x) = x^2 + 1$   
 $f(2) = 5(2) = 10$      $f + g(2) = 10 + 5$   
 $g(2) = 2^2 + 1 = 5$

2. Solve:  $\left(\frac{3}{7}x - \frac{2}{3}\right) \left(3x - \frac{3}{21}\right) = 21$   
 $9x_{+14} - 14 = 63x_{+14} - 3$   
 $-54x = 11$

3. Solve for h:  $2V = \frac{lwh}{2}$   
 $\frac{2V}{1w} = \frac{1wh}{1w}$

4. Graph the solution:  $y < -|x - 3| + 2$

5. Graph the solution:  
 $3x + y > -6$      $y > -3x - 6$   
 $y < \frac{2}{3}x + 4$

1. 15

2.  $x = -11/54$

3.  $h = \frac{2V}{lw}$

4.

5.

6. Find:  $\sqrt{60} + \sqrt{15} - \sqrt{54}$   
 $2\sqrt{15} + \sqrt{15} - 3\sqrt{6}$  9.6

7. Find the equation of the line perpendicular to  $y = -\frac{2}{3}x - 6$  going through the point  $(-2, 5)$  in standard form.

$y - 5 = \frac{3}{2}(x + 2)$      $y - 5 = \frac{3}{2}x + 3$

8. Factor:  $x^3 - 27$      $-2\left(-\frac{3}{2}x + y\right) = (8) - 2$

~~$\begin{array}{r} -12 \\ 12 \times -1 \\ \hline 11 \end{array}$~~

9. Solve:  $6x^3 + 22x^2 - 8x = 0$   
 $2x(3x^2 + 11x - 4) = 0$

$2x(x^2 + 11x - 12) = 0$      $2x(x + 4)(3x - 1) = 0$   
 $2x\left(x + \frac{12}{3}\right)\left(x - \frac{1}{3}\right) = 0$

10. Solve using the quadratic formula:  $3x^2 - 6x + 1 = 0$ . Leave answer in simplest radical form. If no real solution, state, "No real solution."

$\frac{6 \pm \sqrt{36 - 4(3)(1)}}{2(3)}$

$\frac{6 \pm \sqrt{36 - 12}}{6}$

$\frac{6 \pm \sqrt{24}}{6}$

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

6.  $\frac{3\sqrt{15} - 3\sqrt{6}}{}$

7.  $\frac{3x - 2y = -16}{}$

8.  $\frac{(x-3)(x^2+3x+9)}{}$

9.  $X=0, X=-4, X=\frac{1}{3}$

10.  $\frac{3 \pm \sqrt{6}}{3}$