

Algebra II
Section 8-5 Review
Equations & Inequalities

Name KEY

Solve each radical equation.

1) $10 - 3\sqrt{x+8} = 31$
 $-3\sqrt{x+8} = 21$
 $\sqrt{x+8} = -7$
 \emptyset

2) $\sqrt{y+3} = 7$
 $\sqrt{y} = 4$
 $y = 16$

3) $\sqrt[3]{2w} = 4$
 $2w = 64$
 $w = 32$

4) $2 + \sqrt{3p+7} = 6$
 $\sqrt{3p+7} = 4$
 $3p+7 = 16$
 $3p = 9$
 $p = 3$

5) $3n^{1/2} - 11 = 1$
 $3\sqrt{n} - 11 = 1$
 $3\sqrt{n} = 12$
 $\sqrt{n} = 4$
 $n = 16$

6) $(2d+3)^{1/3} = 2$
 $\sqrt[3]{2d+3} = 2$
 $2d+3 = 8$
 $2d = 5$
 $d = 2.5$

7) $\sqrt{3z-2} = \sqrt{z-4}$
 $3z-2 = z-4$
 $2z-2 = -4$
 $2z = -2$
 $z = -1$

check
 $\sqrt{3(-1)-2} = \sqrt{-1-4}$
 $\sqrt{-3-2}$
 $\sqrt{-5}$
 \uparrow
 \emptyset

8) $\sqrt[3]{g+1} = \sqrt[3]{2g-7}$
 $g+1 = 2g-7$
 $1 = g-7$
 $8 = g$

9) $\frac{x^{1/4}}{5} = 1$

$\sqrt[4]{x} = 1$

$\sqrt[4]{x} = 5$

$x = 625$

10) College Prep only: $\sqrt{2x} = \sqrt{2x-15} + 3$
 $\sqrt{2x} - 3 = \sqrt{2x-15}$
 $(\sqrt{2x}-3)(\sqrt{2x}-3) = 2x-15$
 $2x - 6\sqrt{2x} + 9 = 2x-15$
 $-6\sqrt{2x} + 9 = -15$
 $-6\sqrt{2x} = -24$
 $\sqrt{2x} = 4$
 $2x = 16$
 $x = 8$

check
 $\sqrt{2(8)} = \sqrt{2(8)-15} + 3$
 $\sqrt{16} = \sqrt{1} + 3$
 $4 = 1 + 3$
 $4 = 4$
 \checkmark

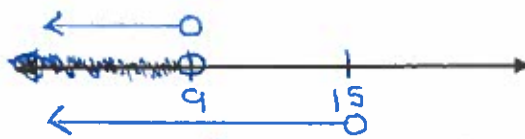
Graph each of the following compound inequalities. You may want to use the "above&below" method to help, but the shading for the final answer must appear on the number line!

11) $x \geq -2$ and $x \leq 11$



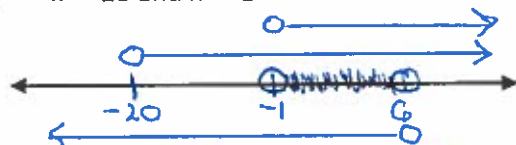
Solution set: $\{-2 \leq x \leq 11\}$

12) $x < 9$ and $x \leq 15$



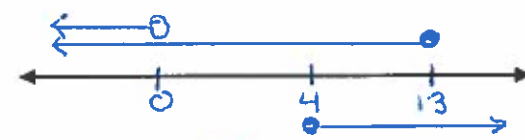
Solution set: $\{x < 9\}$

13) $x > -20$ and $x > -1$ and $x < 6$



Solution set: $\{-1 < x < 6\}$

14) $x \leq 13$ and $x \leq 0$ and $x \geq 4$



Solution set: \emptyset

Solve each radical inequality.

15) $5 + \sqrt{n-3} \leq 6$ and $n-3 \geq 0$

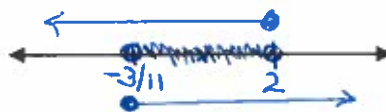
$$\begin{aligned} \sqrt{n+3} &\leq 1 & n &\geq 3 \\ n-3 &\leq 1 & & \\ n &\leq 4 & & \end{aligned}$$



Solution set: $\{3 \leq n \leq 4\}$

16) $-3\sqrt{11x+3} \geq -15$ and $11x+3 \geq 0$

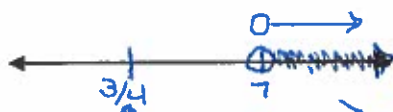
$$\begin{aligned} \sqrt{11x+3} &\leq 5 & 11x &\geq -3 \\ 11x+3 &\leq 25 & x &\geq -\frac{3}{11} \\ 11x &\leq 22 & & \\ x &\leq 2 & & \end{aligned}$$



Solution set: $\{-\frac{3}{11} \leq x \leq 2\}$

17) $2\sqrt{4r-3} > 10$ and $4r-3 \geq 0$

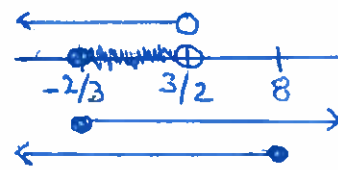
$$\begin{aligned} \sqrt{4r-3} &> 5 & 4r &\geq 3 \\ 4r-3 &> 25 & r &\geq \frac{3}{4} \\ 4r &> 28 & & \\ r &> 7 & & \end{aligned}$$



Solution set: $\{r > 7\}$

18) College Prep only: $\sqrt{3n+2} < \sqrt{8-n}$

$$\begin{aligned} 3n+2 &< 8-n & \text{and } 3n+2 &\geq 0 & \text{and } 8-n &\geq 0 \\ 4n+2 &< 8 & 3n &\geq -2 & -n &\geq -8 \\ 4n &< 6 & n &\geq -\frac{2}{3} & n &\leq 8 \\ n &< \frac{3}{2} & & & & \end{aligned}$$



Solution set: $\{-\frac{2}{3} \leq n < \frac{3}{2}\}$