Secondary Math III
HW 6-3

Name: Selected Answers
Period:_____

Solving Radical Equations

Solve each rational equation algebraically:

1. $\frac{x}{x+4} = -3$

2. $\frac{x}{2x-10} = \frac{3}{1}$ $x \neq 5$

Cross Multiply

$2(x-5)$

$1(x) = 3(2x-10)$

$x = 6x - 30$

$-x \quad -x$

$0 = 5x - 30$

$+30 \quad +30$

$\frac{30}{5} = \frac{5x}{5}$

$\boxed{x = 6}$

3. $\frac{9}{4x} - \frac{5}{6} = -\frac{13}{12x}$

4. $\frac{3}{x+1} + \frac{2}{7} = \frac{2}{1}$ $x \neq -1$

Kill the Denominator

LCD: $7(x+1)$

$\frac{3}{(x+1)} \cdot \frac{7}{7} + \frac{2}{7} \cdot \frac{(x+1)}{(x+1)} = \frac{2}{1} \cdot \frac{7(x+1)}{7(x+1)} =$

$21 + 2x + 2 = 14x + 14$

$-2x \quad -2x$

$23 = 12x + 14$

$-14 \quad -14$

$\frac{9}{12} = \frac{12x}{12}$

$\boxed{x = \frac{9}{12} = \frac{3}{4}}$

5. $\frac{56}{x^2 - 2x - 15} - \frac{6}{x+3} = \frac{7}{x-5}$

7. $\frac{5}{2x+6} - \frac{1}{6} = \frac{2}{x+4}$ $x \neq -3, -4$

$2(x+3) \quad 2 \cdot 3 \quad (x+4)$

LCD: $2 \cdot 3(x+3)(x+4)$

$\frac{5}{2(x+3)} \cdot \frac{3(x+4)}{3(x+4)} - \frac{1}{6} \cdot \frac{(x+3)(x+4)}{(x+3)(x+4)} = \frac{2}{(x+4)} \cdot \frac{2 \cdot 3(}{2 \cdot 3}$

$15x + 60 - x^2 - 7x - 12 = 12x + 36$

$-x^2 + 8x + 48 = 12x + 36$

$+x^2 \quad -8x \quad -48 \quad -8x \quad +x^2 \quad -48$

$0 = x^2 + 4x - 12$

$0 = (x+6)(x-2)$

$\boxed{x = -6, 2}$

8. $\frac{5}{x^2 - 3x + 2} - \frac{1}{x-2} = \frac{x+6}{3x-3}$

16. Art A glassblower can produce several sets of simple glasses in about 3 hours. When the glassblower works with an apprentice, the job takes about 2 hours. How long would it take the apprentice to make the same number of sets of glasses when working alone?

17. Kelsey is kayaking on a river. She travels 5 miles upstream and 5 miles downstream in a total of 6 hours. In still water, Kelsey can travel at an average speed of 3 miles per hour. What is the average speed of the river's current?

$d = r \cdot t$ $\quad t = \frac{d}{r}$ $\quad$ LCD: $(3-x)(3+x)$

$\boxed{\text{River speed} = 2 \text{ mph}}$

Up + Down = Total time

$\frac{5}{3-x} + \frac{5}{3+x} = \frac{6}{1}$ $\quad \frac{(3+x)}{(3+x)} \cdot \frac{(3-x)}{(3-x)}$ $\quad \frac{(3+x)(3-x)}{(3+x)(3-x)}$

$15 + \cancel{5x} + 15 - \cancel{5x} = 6(9-x^2)$

$30 = 54 - 6x^2$

$+6x^2 - 54 \quad -54 + 6x^2$

$6x^2 - 24 = 0$

$\frac{6(x^2-4)}{6} = \frac{0}{6}$

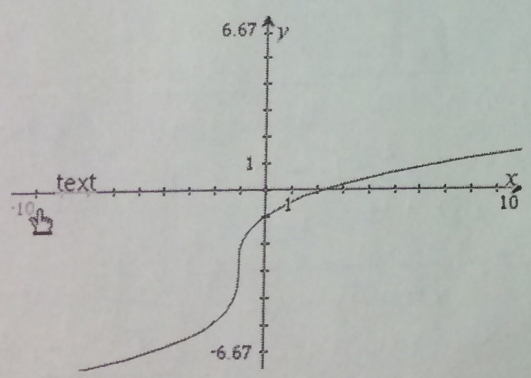
$(x^2-4) = 0$

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

$x = -2, 2$

Review

1. Write an equation to represent the graphed function



2. Graph the function $g(x) = \sqrt{\frac{1}{5}(x+2)} - 2$