Pre-Calculus

Name_____ ID: 1

Solving Rationals HW

Date_____ Period____

Solve each equation. Remember to check for extraneous solutions.

1) $\frac{r-3}{r}+2=\frac{r-1}{r}$

$r-3+2r=r-1$

$2r=2$

$r=1$

2) $\frac{1}{2}+\frac{1}{4}=\frac{x-1}{2x}$

$x=-2$

3) $\frac{5}{a}=\frac{1}{2a}+1$

$10=1+2a$

$\frac{9}{2}=a$

4) $\frac{1}{4n}=\frac{5}{n}-\frac{3n-12}{4n^2}$

$x=-3/4$

5) $\frac{6}{v}-\frac{1}{2}=\frac{v}{2}$

$12-v=v^2$

$0=v^2+v-12$

$0=(v+4)(v-3)$

$v=-4,3$

6) $\frac{1}{2}=\frac{1}{4x^2}+\frac{x^2+4x-5}{4x^2}$

$x=2$

7) $\frac{1}{r^2}=\frac{r-4}{r^2}-\frac{r^2-1}{r^3+4r^2}$

$r^2(r+4)$

$1(r+4)=(r-4)(r+4)-[r^2-1]$

$r+4=r^2-16-r^2+1$

$r=-19$

8) $1-\frac{x+6}{2x^2+6x}=\frac{1}{2x+6}$

$x=1$

9) $\frac{m+6}{3}+\frac{m+2}{3m-3}=\frac{m}{m-1}$ $m=-4$ ~~$m=1$~~

$3(m-1)$

$(m+6)(m-1)+m+2=3m$

$m^2+5m-6+m+2=3m$

$m^2+3m-4=0$

$(m+4)(m-1)=0$

10) $1=\frac{2}{n+3}-\frac{5n-10}{n-5}$

$x=7/3,-5/2$

Name_____

Date_____

Rational Inequalities

Solve each inequality.

1) $\frac{x+1}{x+7} > 0$

$(-\infty,-7) \cup (-1,\infty)$

2) $\frac{x+5}{x+3} < 0$

$(-5,-3)$

3) $\frac{x-9}{x+6} > -2$

$(-\infty,-6) \cup (-1,\infty)$

4) $\frac{2x-21}{5x-35} \geq -1$

$(-\infty,7) \cup [8,\infty)$

5) $\frac{x^2-2x-24}{x+5} \leq 0$

$(-\infty,-5) \cup [-4,6]$

6) $\frac{x^2+11x+28}{x-5} < 0$

$(-\infty,-7) \cup (-4,5)$

7) $\frac{5x+44}{2x+12} > -1$

$(-\infty,-8) \cup (-6,\infty)$

8) $\frac{-x+3}{x-1} \geq 1$

$(1,2]$

9) $\frac{x^2-16x+64}{x-2} \geq 0$

$(2,\infty)$

10) $\frac{x+7}{x^2+3x-40} > 0$

$(-8,-7) \cup (5,\infty)$

11) $\frac{15}{x+8} \geq \frac{14}{x+7}$

$(-8,-7) \cup [7,\infty)$

12) $\frac{4}{x} \geq \frac{3}{x+1}$

$[-4,-1) \cup (0,\infty)$

13) $\frac{x-7}{(x+5)(x+7)} \geq 0$

$(-7,-5) \cup [7,\infty)$

14) $\frac{x-6}{(x+2)(x-7)} \leq 0$

$(-\infty,-2) \cup [6,7)$