Name Key

# Algebra 2CP Worksheet 7-2 Solving Rational Equations

Solve each equation – check for restrictions!!

y = -4 1. $\frac{5}{y+3}-2=\frac{7}{y+3}$

$\frac{5}{y+3}-\frac{2(y+3)}{y+3}=\frac{7}{y+3}$

$5-2y-6=7 \rightarrow -2y=8$

$-2y-1=7 \quad y=-4$

NO SOLUTION 2. $\frac{8}{a-2}+5=\frac{4a}{a-2}$

$\frac{8}{a-2}+\frac{5(a-2)}{a-2}=\frac{4a}{a-2}$

$8+5a-10=4a$

$5a-2=4a$

$a=2$ ahh!

x = -8 3. $\frac{5}{x+7}+1=\frac{4}{x+7}$

$\frac{5}{x+7}+\frac{x+7}{x+7}=\frac{4}{x+7}$

$x+12=4$

$x=-8$

x = 12 4. $\frac{5}{x-5}=2-\frac{x-3}{x-5}$

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

$5=2x-10-x+3$

$5=x-7$

$12=x$

x = 1, -3/2 5. $\frac{k}{k+1}=\frac{3}{k^2-k-2}-\frac{k}{k-2}$

$(k-2)(x+1)$

$k(k-2)=3-k(k+1)$

$k^2-2k=3-k^2-k$

$2k^2+k-3=0$

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

$\frac{-1\pm\sqrt{25}}{4}$

$\frac{-1+5}{4} \quad \frac{-1-5}{4}$

$1, \frac{-3}{2}$

x = 4, -3 6. $\frac{10}{x^2-4}=1-\frac{1(x-2)}{x+2(x-2)}$

$(x-2)(x+2)$

$10=(x-2)(x+2)-(x-2)$

$10=x^2-4-x+2$

$10=x^2-x-2$

$0=x^2-x-12$

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

$x=4, -3$

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**Algebra 2CP Worksheet 7-2 Solving Rational Equations**

X=5 7. $\frac{25}{x}=10-x$

$\frac{25}{x}=\frac{x(10-x)}{x}$

$25=10x-x^2$

$x^2-10x+25=0$

$(x-5)^2=0$

n=2 8. $\frac{2n-3}{4}=\frac{3}{4}+\frac{n-4}{8}$ (4, 2)

$8n-12=6+n-4$

$8n-12=n+2$

$7n=14$

$n=2$

x=2 9. $\frac{13}{x^2-9}+\frac{3}{-(3-x)}=\frac{2}{x+3}$ $(x-3)(x+3)$

$13+-3(x+3)=2(x-3)$

$13-3x-9=2x-6$

$4=5x-6$

$10=5x$

$x=2$

x=5, 2 10. $\frac{x-3}{2}=\frac{1}{x-4}$

$(x-3)(x-4)=2$

$x^2-7x+12-2=0$

$x^2-7x+10=0$

$(x-5)(x-2)=0$

5, 2

m=0, 3 11. $\frac{2m-1}{3m+1}=\frac{m-1}{m+1}$

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

$2m^2+m-1=3m^2-2m-1$

$=m^2-3m$

$=m(m-3)$

$m=0, 3$

y=7 12. $\frac{y+5}{y-4}-\frac{5}{y-2}=\frac{7y-4}{y^2-6y+8}$ $(y-2)(y-4)$

$(y+5)(y-2)-5(y-4)=7y-4$

$y^2+3y-10-5y+20=7y-4$

$y^2-2y+10=7y-4$

$y^2-9y+14=0$

$(y-7)(y-2)=0$