Solving Rational Equations; Practice Name _____

Solve the rational equations. State the excluded values for the variable (What it can not equal).

(y+3) 1. $\frac{5}{y+3}-2=\frac{7}{y+3}$ What can y **not** equal? $\neq -3$

$5-2(y+3)=7$

$5-2y+6=7$

$-2y=8$

$y=-4$

(a-2) 2. $\frac{8}{a-2}+5=\frac{4a}{a-2}$ What can a **not** equal? 2

$8+5(a-2)=4a$ NO solution

$8+5a-10=4a$

$a=2$

(x+7) 3. $\frac{5}{x+7}+1=\frac{4}{x+7}$ What can x **not** equal? -7

$5+x+7=4$

$5+x=-3$

$x=-8$

(x-5) 4. $\frac{5}{x-5}=2-\frac{x-3}{x-5}$ What can x **not** equal? 5

$5=2(x-5)-(x-3)$

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

$5=x-7$

$12=x$

(k+1)(k-2) 5. $\frac{k}{k+1}=\frac{3}{k^2-k-2}-\frac{k}{k-2}$ What can k **not** equal? $-1, 2$

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

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

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

$(2k-3)(k+1)=0$

$k=3/2$ $k\neq -1$

(x^2-4) 6. $\frac{10}{x^2-4}=1-\frac{1}{x+2}$ What can x **not** equal? ± 2

$10=x^2-4-(x-2)$

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

$10=x^2-x-2$

$0=x^2-x-12$

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

$x=4$ $x=-3$

7. $\frac{25}{x} = 10 - x$ (×x) What can x **not** equal? 0

$25 = 10x - x^2$

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

$(x-5)^2 = 0$

$x = 5$

8. $\frac{2n-3}{2} = \frac{3^2}{4} + \frac{n-4}{8}$ What can n **not** equal? NO RESTRICTIONS

$4(2n-3) = 6 + n - 4$

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

$8n - 12 = n + 2$

$7n = 14$

$n = 2$

9. $\frac{13}{x^2-9} + \frac{3}{3-x} = \frac{2}{x+3}$ $(x+3)(x-3)$ What can x **not** equal? 3, -3

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

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

$-3x + 4 = 2x - 6$

$10 = 5x$

$2 = x$

10. $\frac{x-3}{2} = \frac{1}{x-4}$ $(x-4)^2$ What can x **not** equal? 4

$(x-3)(x-4) = 1(2)$

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

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

$(x-5)(x-2)$

$x = 5, x = 2$

11. $\frac{2m-1}{3m+1} = \frac{m-1}{m+1}$ $(3m+1)(m+1)$ What can m **not** equal? 1, $-\frac{1}{3}$

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

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

$0 = m^2 - 3m$

$0 = m(m-3)$

$m = 0 \quad m = 3$

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

What can y **not** equal? 4, 2

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

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

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

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

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

$y = 7, 2$