QUIZ REVIEW

① $\dfrac{m^{-1}+n^{-1}}{m^{-2}-n^{-2}}$

② $\dfrac{\dfrac{y-7}{y^2}+4}{\dfrac{y-7}{y^2}}$

③ $\dfrac{3a^2}{9a^2-b^2}+\dfrac{3a}{3a+b}-\dfrac{2b}{3a-b}$

④ $\dfrac{h(h-7)}{h^2+5h}+\dfrac{-6(h+5)}{h^2-7h}$

$\dfrac{h(h-7)}{h(h+5)(h-7)}+\dfrac{-6(h+5)}{h(h-7)(h+5)}$

$\dfrac{h^2-7h-6h-30}{h(h+5)(h-7)} = \boxed{\dfrac{h^2-13h-30}{h(h+5)(h-7)}}$

① $$\frac{m^{-1}+n^{-1}}{m^{-2}-n^{-2}} = \frac{\frac{1}{m}+\frac{1}{n}}{\frac{1}{m^2}-\frac{1}{n^2}} = \frac{\frac{n+m}{mn}}{\frac{n^2-m^2}{m^2n^2}} = \frac{n+m}{mn}\cdot\frac{m^2n^2}{(n+m)(n-m)}$$

$$= \frac{mn}{n-m}$$

Quiz Practice

② $$\frac{\frac{y-7}{y^2}+4}{\frac{y-7}{y^2}} = \frac{\frac{y-7}{y^2}+\frac{4\cdot y^2}{1\cdot y^2}}{\frac{y-7}{y^2}} = \frac{\frac{y-7+4y^2}{y^2}}{\frac{y-7}{y^2}} = \frac{4y^2+y-7}{y-7}$$

③ $$\frac{3a^2}{9a^2-b^2} + \frac{3a}{3a+b} - \frac{2b}{3a-b}$$

$(3a+b)(3a-b)$

$3a^2 + 9a^2 - 3ab - 6ab + 2b^2$ $(a\ b)(a\ 2b)$

$$\frac{12a^2-9ab-2b^2}{(3a+b)(3a-b)}$$ ← factorable?

④ $$\frac{h(h-7)}{h^2+5h} - \frac{6(h+5)}{h^2-7h} = \frac{h^2-7h-6h-30}{h(h+5)(h-7)}$$

$h(h+5)$ $\quad h(h-7)$

$$= \frac{h^2-13h-30}{h(h+5)(h-7)}$$ ← factorable??

DAY 5 Rational Equations & Inequalities

SOLVE.

LCD: 6

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

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

$2x + 2 + x - 1 = 6x + 3$

$3x + 1 = 6x + 3$

$-2 = 3x$

$\frac{-2}{3} = x$

② $\frac{3(x-14)}{3\cdot 4} \geq \frac{5x}{12} - \frac{3\cdot 12}{1\cdot 12}$ LCD: 12

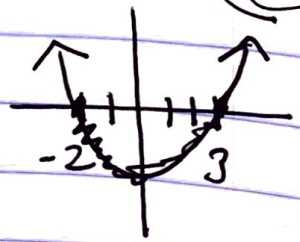
$3x - 42 \geq 5x - 36$ (+42)

$\frac{-2x}{-2} \geq \frac{6}{-2}$

$\{x \mid x \leq -3\}$

★

$(x+2)(x-3) \leq 0$



$\{x \mid -2 \leq x \leq 3\}$

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

Excluded values

$x \neq -1, 2$

LCD: $(x+1)(x-2)$

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

$2x^2 - x = 2x^2 - 2x - 4$

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

$\boxed{x = -4}$

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

$(x+3)(x-1)$

E.V. $x \neq -3, 1$ *

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

$x^2 + 3 = 4$

$x^2 = 1$

$x = \pm 1$

E.V. $x \neq 1$

$\boxed{x = -1}$

Honors Math III - 5.8 & 5.9

Solve each of the following.

1. $\left(\frac{w(w-1)}{3}+\frac{1}{2}=\frac{w+1}{4}\right)^{12}$

$4w(w-1)+6=3(w+1)$

$4w^2-4w+6=3w+3$

$4w^2-7w+3=0$

$(w-1)(4w-3)=0$

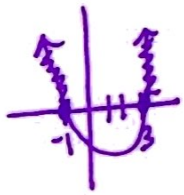
$w=1, \frac{3}{4}$ check?!

2. $\left(\frac{z^2+1}{6}\geq\frac{z+2}{3}\right)\frac{6}{1}$

$z^2+1\geq 2z+4$

$z^2-2z-3\geq 0$

$(z+1)(z-3)\geq 0$



$\{z \mid z\leq -1 \text{ or } z\geq 3\}$

3. $\left(\frac{1}{s}+\frac{s}{s+2}=\frac{1}{1}\right)\frac{s(s+2)}{1}$ E.V. $s\neq 0,-2$

$s+2+s^2=s^2+2s$

$2=s$ check?!

4. $\left(\frac{1}{t-1}+\frac{1}{t+2}=\frac{3}{t^2+t-2}\right)\frac{(t+2)(t-1)}{1}$

$(t+2)(t-1)$

E.V. $t\neq -2, 1$

$t+2+t-1=3$

$2t+1=3$

$2t=2$

$t=1$ check?! no solution

5. $\left(\frac{1}{x+1}-\frac{1}{x+2}=\frac{1}{2}\right)\frac{2(x+1)(x+2)}{1}$ ev. $x\neq -1,-2$

$2(x+2)-2(x+1)=x^2+3x+2$

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

$0=x^2+3x$

$0=x(x+3)$

$x=0, -3$

6. $\left(\frac{9}{t^2-2t-8}+\frac{t}{t+2}=2\right)\frac{(t+2)(t-4)}{1}$ ev $x\neq -2,4$

$(t+2)(t-4)$

$9+t(t-4)=2(t^2-2t-8)$

$9+t^2-4t=2t^2-4t-16$

$0=t^2-25=(t+5)(t-5)$

$0=7$ $t=\pm 5$