Worksheet Chapter 7 Name _____

Direction: Write neatly; show your work in an organized fashion.

1. Reduce: $\frac{6x^2+17x+7}{2x^2+7x+3}$

2. Divide: $\frac{25y^2-1}{9y^2-6y} \div \frac{5y^2+9y-2}{3y^2+y-2}$

3. Add: $\frac{x}{x^2+11x+30} + \frac{-5}{x^2+9x+20}$

4. Simplify: $\frac{9-\frac{1}{y^2}}{3-\frac{1}{y}}$

5. Solve: $\frac{7}{y} - \frac{1}{3} = \frac{1}{4}$

Worksheet Chapter 7 **SOLUTIONS**

1. Reduce: $\dfrac{6x^2+17x+7}{2x^2+7x+3} = \dfrac{(3x+7)(2x+1)}{(x+3)(2x+1)} = \dfrac{(3x+7)}{(x+3)}$

2. Divide: $\dfrac{25y^2-1}{9y^2-6y} \div \dfrac{5y^2+9y-2}{3y^2+y-2} = \dfrac{25y^2-1}{9y^2-6y} \cdot \dfrac{3y^2+y-2}{5y^2+9y-2} = \dfrac{(5y+1)(5y-1)}{3y(3y-2)} \cdot \dfrac{(3y-2)(y+1)}{(5y-1)(y+2)}$

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

3. Add: $\dfrac{x}{x^2+11x+30} + \dfrac{-5}{x^2+9x+20} = \dfrac{x}{(x+5)(x+6)} + \dfrac{-5}{(x+4)(x+5)}$, [so LCD = (x+4)(x+5)(x+6)]

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

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

Multiply by a "fancy"one

4. Simplify: $\dfrac{9-\frac{1}{y^2}}{3-\frac{1}{y}} = \dfrac{\left(9-\frac{1}{y^2}\right)}{\left(3-\frac{1}{y}\right)}\left(\dfrac{y^2}{y^2}\right) = \dfrac{9y^2-\frac{y^2}{y^2}}{3y^2-\frac{y^2}{y}} = \dfrac{9y^2-1}{3y^2-y} = \dfrac{(3y+1)(3y-1)}{y(3y-1)} = \dfrac{(3y+1)}{y}$

Multiply by "fancy" one and distribute y^2 to all four terms

5. Solve: $\dfrac{7}{y} - \dfrac{1}{3} = \dfrac{1}{4}$. The LCM is 12y, so multiply every term by 12y.

$$\frac{12y \cdot 7}{y} - \frac{12y \cdot 1}{3} = \frac{12y \cdot 1}{4} \longrightarrow 12 \cdot 7 - 4y \cdot 1 = 3y \cdot 1 \longrightarrow 84 - 4y = 3y$$

+4y +4y

$$\frac{84}{7} = \frac{7y}{7} \qquad y = 12$$