

/23 T

/7 C

/11 A

Complete all work in the space provided. Keep it neat and organize it well.

1. Simplify. State any restrictions on the variable. (A:11: 3, 4, 4; C: 3)

a) $\frac{n-1}{3n^2-3n}$

$$= \frac{\cancel{n-1}}{3n(\cancel{n-1})}$$

$$= \frac{1}{3n} \quad \{n \neq 0, 1\}$$

b) $\frac{x^2+8x-20}{x^2+7x-30}$

$$= \frac{(\cancel{x+10})(x-2)}{(\cancel{x+10})(x-3)}$$

$$= \frac{x-2}{x-3} \quad \{x \neq -10, 3\}$$

c) $\frac{y^2-36}{2y-12}$

$$= \frac{(\cancel{y-6})(y+6)}{2(\cancel{y-6})}$$

$$= \frac{y+6}{2} \quad \{y \neq 6\}$$

2. Simplify. State any restrictions on the variable.

(T:23; 4, 6, 5, 8; C: 4)

a) $\frac{2x(3)5x-2}{y(3)3y^2}$

$$= \frac{6xy}{3y^2} + \frac{5x-2}{3y^2}$$

$$= \frac{6xy + 5x - 2}{3y^2} \quad \{y \neq 0\}$$

b) $\frac{m}{m^2 - 3m + 2} + \frac{2m + 1}{m^2 + m - 2}$

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

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

$$= \frac{3m^2 - m - 2}{(m-2)(m-1)(m+2)} \quad \{m \neq -2, 1, 2\}$$

This is where I expected you to stop, however, the numerator is actually factorable!

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

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

$$c) \frac{x^2+13x+40}{x-4} \times \frac{x^2-16}{x^2+8x+15}$$

$$= \frac{(x+8)\cancel{(x+5)}}{\cancel{x-4}} \times \frac{\cancel{(x-4)}(x+4)}{(\cancel{x+5})(x+3)}$$

$$= \frac{(x+8)(x+4)}{x+3} \quad \{x \neq -5, -3, 4\}$$

$$d) \frac{7x}{\frac{5x^2-125}{5(x^2-25)}} + \frac{4x+8}{x^2+9x+20} \div \frac{5(x^2-3x-10)}{x^2+x-12}$$

$$= \frac{7x}{5(x-5)(x+5)} + \frac{4\cancel{(x+2)}}{(\cancel{x+4})(x+5)} \times \frac{\cancel{(x+4)}(x-3)}{5\cancel{(x+2)}(x-5)}$$

$$= \frac{7x}{5(x-5)(x+5)} + \frac{4(x-3)}{5(x+5)(x-5)} \quad \text{— Wrote it!! Same denominator!!}$$

$$= \frac{7x + 4x - 12}{5(x-5)(x+5)}$$

$$= \frac{11x-12}{5(x-5)(x+5)} \quad \{x \neq -5, -4, -2, 3, 5\}$$