7 Classwork 7 MAT 1275 Professor Chiu

Name: _____

1. Subtract and simplify: term 1 term 2

$$\frac{x+11}{(x+1)(x+3)} - \frac{12}{(x+3)(x)}$$

① Find common denominator: "copy" the factor from one to the other:

$$= \frac{(x+11)\,x}{(x+1)(x+3)\,x} - \frac{12(x+1)}{(x+3)(x)(x+1)}$$

(miss "x" from term 2) (miss "x+1" from term 1)

② Combine two fraction and simplify the numerator

$$= \frac{(x+11)\cdot x - 12(x+1)}{(x+1)(x+3)x} = \frac{x^2+11x-12x-12}{(x+1)(x+3)x}$$

$$= \frac{x^2-x-12}{(x+1)(x+3)\cdot x} = \frac{(x+3)(x-4)}{(x+1)(x+3)x} = \boxed{\frac{x-4}{(x+1)x}}$$

2. Simplify and check your answers by evaluating and an appropriate value:

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

① Simplify the numerator:

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

• "copy" term to get common denominator

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

$$= \frac{t-3}{t(t-1)}$$

② $\left(\frac{3}{t} - \frac{2}{t-1}\right) \div \left(\frac{t}{1-t}\right)$

$$= \left(\frac{3}{t} - \frac{2}{t-1}\right) \times \left(\frac{1-t}{t}\right)$$

① $$= \frac{t-3}{t(t-1)} \times \frac{1-t}{t}$$

$(1-t) = -(t-1) = (-1)\times(t-1)$

$$= \frac{(t-3)\times(-1)\times(t-1)}{t\,(t-1)\times t}$$

$$= -\frac{(t-3)}{t\cdot t} = \boxed{-\frac{(t-3)}{t^2}}$$