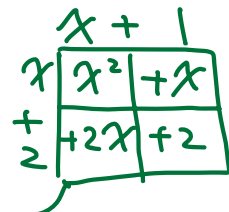# 9 Quiz 9 MAT 1275 Professor Chiu

Name: _____

- This quiz consists of **2** questions, each worth 5 points for a total of **10** points.

- You have **15** minutes to complete the quiz.

- Show all work and justify your answers.

- Scientific calculators are allowed.

- Wishing you success.

1. Subtract and simplify:

$$\frac{x-7}{(x+2)(x-1)} - \frac{x+1}{(x-1)(x)}$$

① Copy the part it does NOT have to get the common denominator

② Combine two fractions

$$\frac{(x-7)\,x}{(x+2)(x-1)\,x} - \frac{(x+1)(x+2)}{(x-1)(x)(x+2)}$$

×	x	$+1$
x	x^2	$+x$
$+2$	$+2x$	$+2$

×	x	-7
x	x^2	$-7x$

$$= \frac{x^2 - 7x - \left(x^2 + 3x + 2\right)}{(x+2)(x-1)\,x}$$

$$= \frac{x^2 - 7x - x^2 - 3x - 2}{(x+2)(x-1)\,x} = \frac{-10x - 2}{(x+2)(x-1)\,x}$$

PLEASE TURN OVER FOR THE NEXT QUESTION.

2. Simplify:

$$\frac{\dfrac{2}{x-2}+\dfrac{1}{x+2}}{1-\dfrac{x}{2-x}}$$

① Numerator: $\dfrac{2}{x-2}+\dfrac{1}{x+2}$

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

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

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

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

② Denominator: $1-\dfrac{x}{2-x}$

$$=\frac{1}{1}-\frac{x}{2-x}$$

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

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

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

③ $\dfrac{\dfrac{2}{x-2}+\dfrac{1}{x+2}}{1-\dfrac{x}{2-x}}$

$$=\left(\frac{2}{x-2}+\frac{1}{x+2}\right)\div\left(1-\frac{x}{2-x}\right)$$

by ①   by ②
$$=\left(\frac{3x+2}{(x-2)(x+2)}\right)\div\left(\frac{2-2x}{2-x}\right)$$

"flip"

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

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

$$\boxed{\begin{aligned}2-x&=-1\cdot(-2+x)\\&=-1\cdot(x-2)\\&=-(x-2)\end{aligned}}$$

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

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