MATH 141: Quiz 2

Name: Key

Directions:

- Show your thought process (commonly said as "show your work") when solving each problem for full credit.
- If you do not know how to solve a problem, try your best and/or explain in English what you would do.
- Good luck!

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1. Completely factor and simplify these expressions:

   (a) $4x^2 - 8x - 5$ $= (2x-5)(2x+1)$

   $a=1,\ b=-8,\ c=-5$

   ① $\begin{array}{c|c|c} 2 & 4 & 1 \\ 2 & 1 & 4 \end{array}$ ③ $\begin{array}{cc} 2 & -5 \\ 2 & 1 \end{array} \rightarrow -10+2=8$

   ② $\begin{array}{c|c} 5 & 5 \\ -1 & -1 \end{array}$

   3 terms

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

   GCF $= (x+2)\left((x-1)^2 - 3(x-1) + 2\right)$

   or you can do this →

   SP #2 dist $= (x+2)(x^2 - 2x + 1 - 3x + 3 + 2)$

   $= (x+2)(x^2 - 5x + 6)$ $a=1,\ b=-5,\ c=6$

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

   Let $y = (x-1)$. Then

   $y^2 - 3y + 2$

   $= (y-2)(y-1)$

   $1\ -2$

   $1\ -1$

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

   $1\ -3$

   $1\ -2$

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

2. Perform the operation and fully simplify.

(a) $\dfrac{x}{(x+1)(x-1)} - \dfrac{1}{x+1} = \dfrac{x}{(x+1)(x-1)} - \dfrac{1}{x+1} \cdot \dfrac{x-1}{x-1}$

Subtraction of fractions

find LCD.

frac law 1 $= \dfrac{x}{(x+1)(x-1)} - \dfrac{x-1}{(x+1)(x-1)}$

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

$= \dfrac{x-x+1}{(x+1)(x-1)}$

$= \boxed{\dfrac{1}{(x+1)(x-1)}}$