MATH 119: Quiz 1

Name: _key_

Directions:

* No calculators.

* Show your thought process (commonly said as "show your work") when solving each problem for full credit.

* Good luck!

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1. When trying to apply exponent laws, are we allowed to apply them to **terms**? If not, what are we allowed to apply them to?

   No, factors only

2. Simplify the following:

   (a) $4x^2 - 3xy - 3x^2 + x - 2xy = \boxed{x^2 + x - 5xy}$

   (b) $(2xy)^2 \cdot \dfrac{2x^{-1}y^2}{4(xy)^{-2}z} \overset{(4)}{\underset{(6)}{=}} 2^2 x^2 y^2 \cdot \dfrac{2(xy)^2 y^2}{4xz} \overset{(4)}{=} 4x^2 y^2 \cdot \dfrac{2x^2 y^2 y^2}{4xz}$

   $\overset{(1)}{=} \dfrac{8x^4 y^6}{4xz} \overset{(2)}{=} \boxed{\dfrac{2x^3 y^6}{z}}$

   fraction cancellation law (#5)

(c) $\left(\dfrac{x}{y}\right)^2 \cdot \left(\dfrac{x+1}{x(x-1)}\right)^{-2}$ ⑤ ⑥ $= \dfrac{x^2}{y^2} \cdot \left(\dfrac{x(x-1)}{(x+1)}\right)^2$ ⑤ $= \dfrac{x^2}{y^2} \cdot \dfrac{(x(x-1))^2}{(x+1)^2}$

treat as factor!

④ $= \dfrac{x^2}{y^2} \cdot \dfrac{x^2(x-1)^2}{(x+1)^2}$ ① $= \boxed{\dfrac{x^4(x-1)^2}{y^2(x+1)^2}}$

frac property

#1

x and 1 are terms. do NOT use exp laws on terms.

3. Factor the following:

(a) $xy + x$

$= \boxed{x(y+1)}$

(b) $3xy + 6xy^2 + 12x^2y^2$

$3xy \;:\; 3 \cdot x \cdot y$
$6xy^2 \;:\; 2 \cdot 3 \cdot x \cdot y \cdot y$
$12x^2y^2 \;:\; 2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot y \cdot y$

$= \boxed{3xy(1 + 2y + 4x^2y)}$

this is 1 not 0 because question said factor.
expanding (dist law) is reverse of factoring.
So go backwards and distribute to check your work.

$3xy \cdot 0$ is 0 not $3xy$.

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