MATH 118: Quiz 4

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. What is the domain of the following function?

$$f(x) = \frac{1}{x-3}$$

① Start with $\mathbb{R}$

② Problems: can't divide by zero

$x - 3 = 0$

$x = 3$ ← remove

③ Remove problems:

$(-\infty, 3) \cup (3, \infty)$

2. Given $f(x) = 2x - 1$, evaluate and fully simplify the expression $f(x+h) - f(x)$.

Compare $f(x+h)$. See how $x+h$ replaces the x.

Now do that.

$f(x+h) - f(x) = \underbrace{2(x+h) - 1}_{f(x+h)} - \underbrace{(2x-1)}_{f(x)}$ (2 multiplies into two terms; -1 multiplies into two terms)

$\overset{\text{dist}}{=} 2x + 2h - 1 - 2x + 1$

$= \boxed{2h}$

3. Draw the graph of the function $f(x) = 2x - 1$.

x	$f(x)$
-2	$2(-2) - 1 = -5$
-1	$2(-1) - 1 = -3$
0	$2 \cdot 0 - 1 = -1$
1	$2 \cdot 1 - 1 = 1$
2	$2 \cdot 2 - 1 = 3$