Quiz2, MAT1375 Professor Chiu

ID:_____ Name: Sol. _____

- This quiz consists of 3 questions for a total of 10 points.
- You have 15 minutes to complete the quiz.
- Show all work and justify your answers.
- Wishing you success.

1. Given $f(x) = x^2 - 2x + 1$. Sketch f and use the vertical line test to explain f is a function of x.

x	-1	0	1	2	3
f(x)	4	1	0	1	4

$f(-1) = (-1)^2 - 2(-1) + 1 = 1 + 2 + 1 = 4$

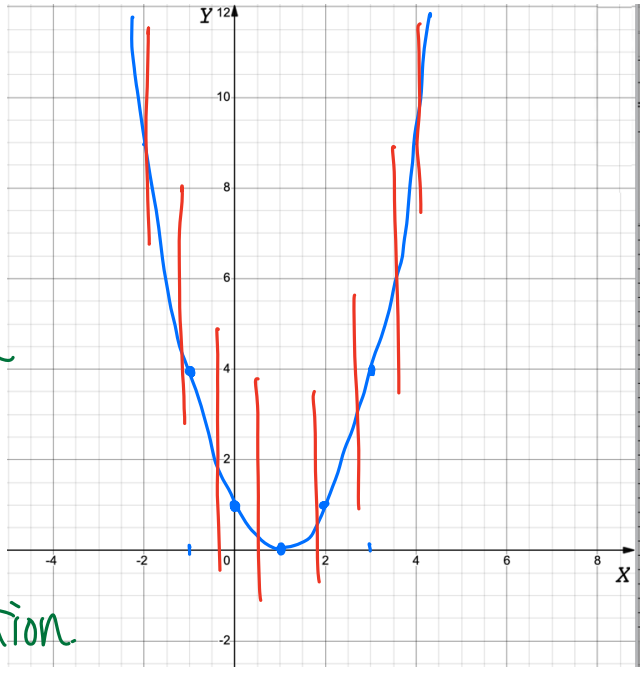
$f(0) = 0^2 - 2(0) + 1 = 0 - 0 + 1$

$f(1) = 1^2 - 2 \cdot 1 + 1 = 0$

$f(2) = 2^2 - 2 \cdot 2 + 1 = 4 - 4 + 1 = 1$

$f(3) = 3^2 - 2 \cdot 3 + 1 = 9 - 6 + 1 = 4$

Since there is (at most) one intersection for each vertical line with $f(x)$, then $f(x)$ is a function.



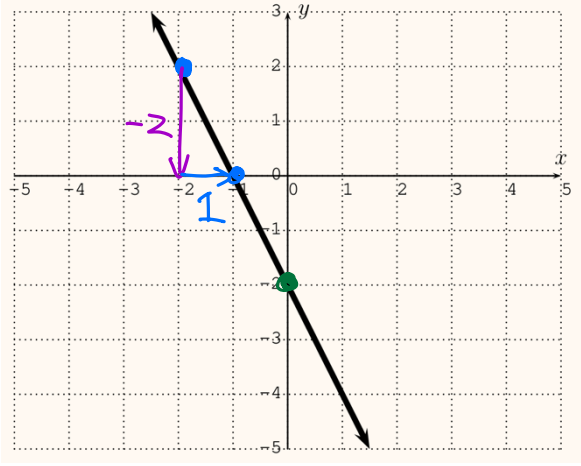
2. Given the graph of a line. Find (a) the slope and (b) y-intercept of the line. Then (c) use the slope and y-intercept, write the equation of the line in slope-intercept form.

(a) $\text{slope} = \frac{-2}{1} = -2$

(b) y-intercept is $(0, -2)$

(c) slope-intercept form:

$y = -2 \cdot x - 2$



Please turn over and finish the rest of the question.

3. Consider the following graph of a function f.

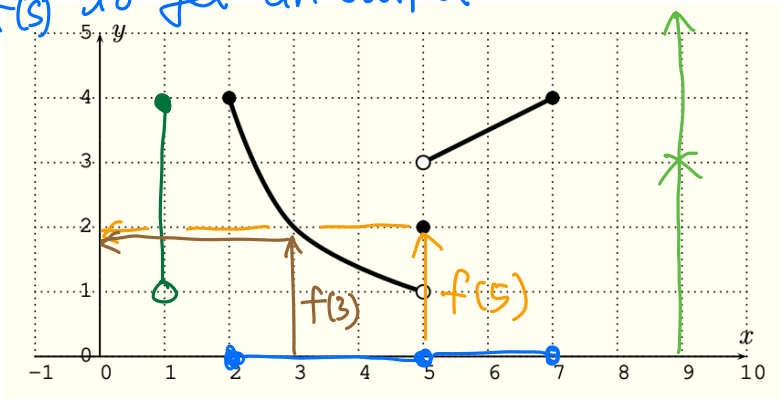
Find (a) the domain of f. (b) the range of f. (c) $f(5)$. (d) $f(3)$. (e) $f(9)$.

(a) domain of f $\Rightarrow$ possible input(s) to get an output.

$2 \le x < 5$, 5 , $5 < x \le 7$

$\Rightarrow x \in [2, 7]$

or $D = \{x \mid 2 \le x \le 7\}$



(b) range of f $\Rightarrow$ possible output $\Rightarrow R = \{y \mid 1 < y \le 4\}$

(c) $f(5) = 2$

$\downarrow x = 5$

(d) $f(3) = 2$

(e) $f(9)$ = undefined.

(there is no output when input is 9)

End of this quiz.