

MATH1100 - QUIZ 9

NAME: **KEY**

You are given the function $f(x) = \frac{5-3x}{x-2}$

State the domain of the function.
Sketch the function.

Domain $x \neq 2$ all the real line but $x=2$

Label:

- intercepts
- relative extrema
- points of inflection
- asymptotes

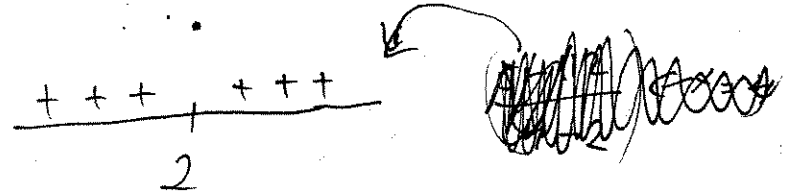
y-intercept = $-\frac{5}{2}$

x-intercept $0 = \frac{5-3x}{x-2} \Rightarrow 0 = 5-3x$
 $\Rightarrow x = \frac{5}{3}$

relative extrema:

$$f'(x) = \frac{(x-2)(-3) - (5-3x)}{(x-2)^2} = \frac{-3x+6-5+3x}{(x-2)^2} = \frac{1}{(x-2)^2}$$

critical point $x=2$

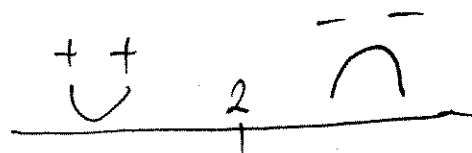


no relative extrema

$$f'(x) = (x-2)^{-2}$$

$$f''(x) = -2(x-2)^{-3} (1) = \frac{-2}{(x-2)^3}$$

concavity



$x=2$ is not an inflection point

(since the function is discontinuous at $x=2$)

If they have marked it as an inflection do not subtract points

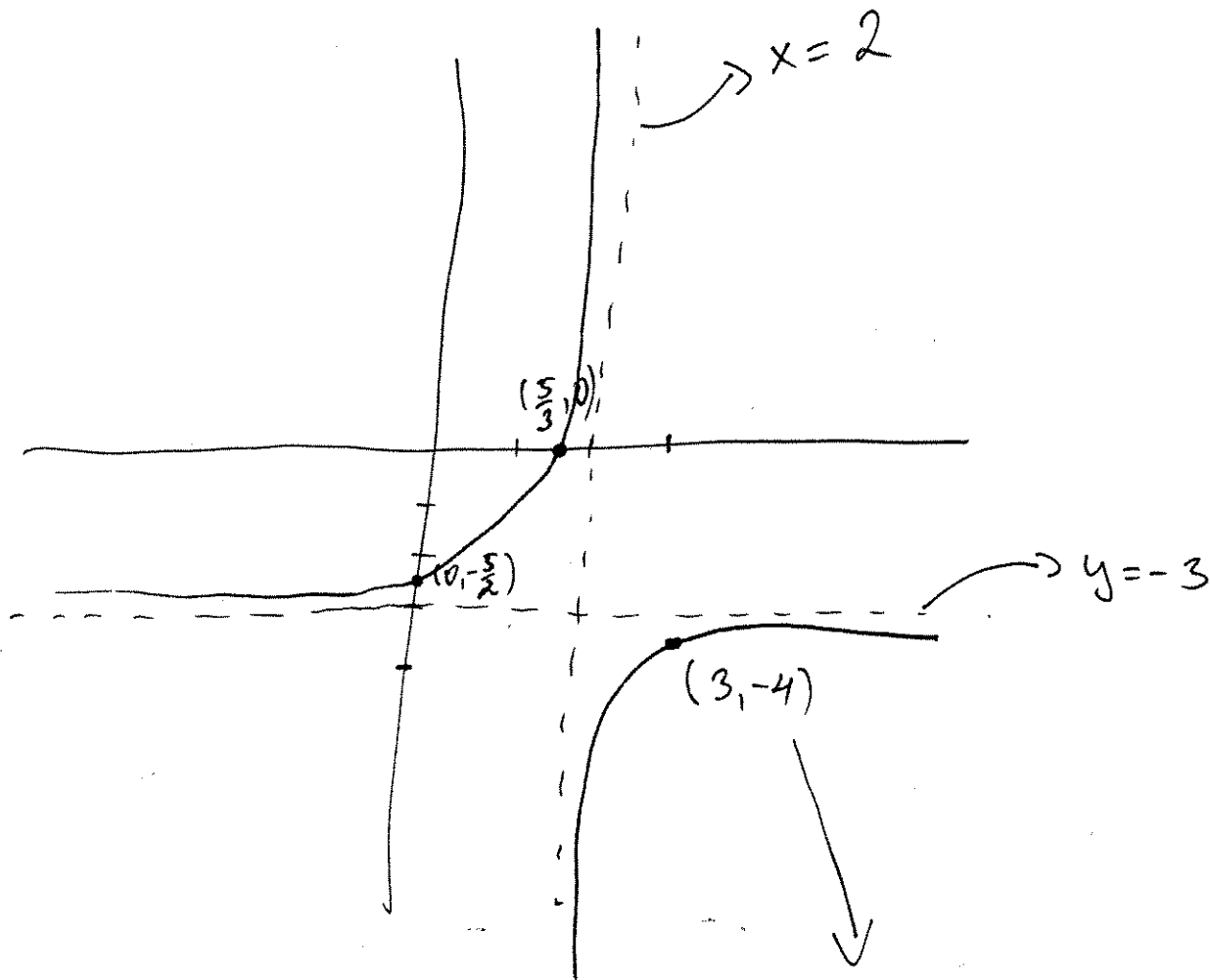
Asymptotes:

$$f(x) = \frac{5-3x}{x-2}$$

H. A. $\lim_{x \rightarrow \infty} \frac{5-3x}{x-2} = -3$ It is OK if they have just written $y = -3$ as H. A.

~~H. A. = -3~~ H. A. : $y = -3$

V. A. : $x = 2$



$$f(3) = \frac{5-3(3)}{3-2} = \frac{5-9}{1} = -4$$