

NAME: Solutions

MATH 132 - Michigan State University
September 7th, 2018.

Quiz 1

Clear your desk of everything except pens, pencils and erasers. **Show all your work.**
If you have a question raise your hand and I will come to you.

1. [2 points] Find the vertical asymptotes for the function:

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

Vertical Asymptote: $x=5$ (1pt.) - correct answer

(1pt.) - simplification

2. [2 points] Find the limits:

a). $\lim_{x \rightarrow 5^-} \frac{8x}{x-5} = -\infty$ (1pt.)

$$\frac{8 \cdot 5}{0_-}$$

b). $\lim_{x \rightarrow 5^+} \frac{8x}{x-5} = +\infty$ (1pt.)

$$\frac{8 \cdot 5}{0_+}$$

3. [6 points] Find the limits:

a). $\lim_{x \rightarrow 4} \frac{x^2-16}{x-4} = \lim_{x \rightarrow 4} \frac{(x-4)(x+4)}{x-4} = \lim_{x \rightarrow 4} (x+4) = 8$

(1pt.) (1pt.) (1pt.)

Simplification

b). $\lim_{h \rightarrow 0} \frac{4(1+h)^2-4}{h} = \lim_{h \rightarrow 0} \frac{4(1+2h+h^2)-4}{h} = \lim_{h \rightarrow 0} \frac{4+8h+4h^2-4}{h}$

$$= \lim_{h \rightarrow 0} (8+4h) = 8$$

(2pts.) - simplification

(1pt.) - final answer