

Present neatly on separate paper. Justify for full credit. No Calculators.

Name _____ Score _____ ~10 minutes

1.

Find the values of a and b that make f continuous everywhere.

$$f(x) = \begin{cases} \frac{x^2 - 4}{x - 2} & \text{if } x < 2 \\ ax^2 - bx + 3 & \text{if } 2 \leq x < 3 \\ 2x - a + b & \text{if } x \geq 3 \end{cases}$$

[5 points]

2.

Briefly explain the Intermediate Value Theorem to a non-mathematical person. Why is it important? [5 points]

3. Find the limit or explain why it does not exist. [5 points]

a)

$$\lim_{h \rightarrow 0} \frac{\sin h}{1 - \cos h}$$

b)

$$\lim_{x \rightarrow 0} \frac{\sin 6x}{\sin 8x}$$
