MATH 190, QUIZ 2
Oct 10, 2018
Time: 15 minutes

Show all your work. No calculators, no books/notes are allowed.

Name (please print): _____

Student number: _____

1. [5 points] Determine whether the following statements are True or False. Provide a justification or a counter-example (an example that contradicts the statement).

   (a) $\lim_{x \to -1} f(x) = 4$ implies that $f(-1) = 4$.

   (b) If $g(x) = \begin{cases} \dfrac{x^2 - 6x + 8}{x - 4} & x < 4 \\ \sqrt{x} & x \geq 4 \end{cases}$, then $\lim_{x \to 4} g(x)$ does NOT exist.

2. [4 points] Find the vertical and horizontal asymptotes of $f(x) = \dfrac{x^2}{x - \pi}$.

3. [3 points] Sketch the graph of a function $f(x)$ satisfying **all** the following conditions:

- f is defined everywhere except at $x = 2$ and $x = -2$.

- $\lim\limits_{x \to 2^+} f(x) = -\infty$ and $\lim\limits_{x \to 2^-} f(x) = -\infty$

- f has a finite limit at $x = -2$.

- f has a horizontal asymptote at $y = 1$.

  Make sure your graph passes the vertical line test to be a function!