

MA 16010 Quiz 2

Lessons 4-6

28 January 2021

Show all relevant work for each problem, unless otherwise stated. Partial credit will be given for steps leading to correct solutions. Little or no work, even with a correct answer, will receive little or no credit.

Problem 1. Find the following limits if they exist.

$$f(x) = \begin{cases} 5x^2 - 4 & x \leq 2 \\ 2x^2 + 1 & 2 < x \leq 3 \end{cases}$$

$$(a) \lim_{x \rightarrow 2^-} f(x) = \quad (b) \lim_{x \rightarrow 2^+} f(x) = \quad (c) \lim_{x \rightarrow 2} f(x) =$$

Problem 2. Classify the discontinuities from Problem 1
(pick from hole, vertical asymptote, or jump)

Problem 3. Let $f(x) = x^2 - 3$ find the limit using the definition. You must show all of the steps to get credit

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} =$$