

1. (3 points each. No partial credit.) The questions on this page are True or False. They do not require an explanation. For each question, circle your choice for the correct answer. Only answer True when the statement is **ALWAYS** True.

(a) The function  $f(x) = \frac{e^x}{x^2 - 1}$  is continuous on  $[2, 5]$ .

True      False

(b) Suppose  $g$  is a differentiable function on  $(-1, 1)$  with  $g(1) < 0$  and  $g'(x) > 0$  for  $x$  in  $(-1, 1)$ , then  $g(x)$  has a zero on the interval  $[-1, 1]$ .

True      False

(c) If  $\lim_{x \rightarrow 0^-} f(x) = \lim_{x \rightarrow 0^+} f(x)$  then  $f$  is continuous at  $x = 0$ .

True      False

(d) If  $x > 0$  and  $e^{xy-2} = x^2$ , then  $y = \frac{2}{x}(1 + \ln x)$ .

True      False

(e) A function that is continuous on  $[a, b]$  is always differentiable on  $[a, b]$ .

True      False

(f) If  $f'(a) = 0$  and  $f'(x) > 0$  for  $x < a$ , then  $f''(x) > 0$  for  $x < a$ .

True      False