King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Math 101 (Term 173) – Quiz 2

Student Name_____ **Student ID:** _____

Exercise 1 [**6 points**]

Let $f(x) = \frac{x^3-x^2+x-1}{x^3-x^5}$

[**Justify your answers**]

1. f has removable discontinuity at:

2. f has infinite discontinuity at:

3. The vertical asymptote(s) of f is(are):

4. The horizontal asymptote(s) of f is(are):

Exercise 2 [**4 points**]

Let $f(x) = \begin{cases} x^3 \sin\frac{1}{x} & ; \quad x < 0 \\ x & ; \quad 0 \le x < 4. \\ \frac{1}{5+x} & ; \quad x \ge 4 \end{cases}$

[**Justify your answers**]

1. Find the left-hand derivative of f at 0.

2. Find the right-hand derivative of f at 0.

3. Is f differentiable at 4?

4. Where is f differentiable?