

**King Fahd University of Petroleum and Minerals**  
**Semester 181, MATH 106- QUIZ 2**

Name

ID

S/N :

1. Use definition to find the derivative of  $f(x) = \sqrt{x+1}$ .

2. The displacement (in meters) of a particle moving in a straight line is given by  $s(t) = \frac{1}{2}t^2 - 6t + 23$ , where  $t$  is measured in seconds.

a) Find the average velocity over  $[6, 8]$

b) Find the velocity when  $t=8$

3. Find the derivative of  $y = \frac{(x^2-4x)^4(3x-4)}{\sqrt{x-1}}$

4. The production costs, in dollars for producing  $x$  units of pencils is given by  $C(x) = 200 + 0.5x + \frac{10000}{x}$ .

a) What is the marginal cost when  $x = 200$

b) What does your answer tell about the production cost

c) Find the relative rate of change of the production cost when  $x = 200$