

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS

Term 181
MATH 101 Quiz 3

Name: _____ ID #: _____

1. Differentiate

a. $f(x) = \sin^{-1}(2x + 1)$ (2marks)

b. $f(x) = \tan^{-1}(x - \sqrt{1 + x^2})$ (2marks)

c. $y = \frac{\ln x}{1 + \ln x}$ (2marks)

d. $y = (\cos x)^{\ln x}$ (3marks)

2. If a rock is thrown vertically upward from the surface of Mars with velocity 15m/sec, its height after t seconds is $h(t) = 15t - 1.86t^2$.

a. What is the velocity of the rock after 2 seconds? *(1mark)*

b. What is the maximum height the rock can reach? *(1mark)*

c. What is the velocity of the rock its height is 25 meters on its way up? *(1mark)*

d. What is the velocity of the rock its height is 25 meters on its way down? *(1mark)*

e. What is the velocity of the rock when it hits the ground? *(2marks)*