

King Fahd University of Petroleum and Minerals  
MATH-201  
Dr. Ahmad Al-Dweik  
Quiz 3

Name and section: \_\_\_\_\_  
ID and S.N.: \_\_\_\_\_

Answer the questions in the spaces provided on the question sheets.  
Write your final answer inside boxes.

1. (a) Find the intersection point of the lines parameterized by

$$C_1(t) = (1 + 2t, 2 - 3t, 3) \text{ and } C_2(t) = (-t, t + 3, 1 - 2t).$$

- (b) Find the equation of the plane containing of these lines. Write your answer in the form  $Ax + By + Cz = D$ .

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2. (a) Find and sketch the domain of the function  $f(x, y) = \arcsin(x + y)$ .  
(b) Find the range of  $f$ .

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3. The equation  $xy + xz^3 - 2yz = 5$  defines  $z$  as an implicit function of  $x$  and  $y$ . Find  $\frac{\partial z}{\partial y}$  at the point  $(3, 2, 1)$ .

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4. In the following problem: if the limit exists, compute it; if the limit does not exist, prove it.

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(a) 
$$\lim_{(x,y) \rightarrow (0,0)} \frac{xy^3}{x^2+y^6}$$

(b) 
$$\lim_{(x,y) \rightarrow (4,2)} \frac{\sin(x-y^2)}{x^2-y^4}$$