

## Quiz #5

Monday, March 19 2018

**Duration: 15 min**

**NAME:** \_\_\_\_\_

**Please write clearly and properly.**

**Explain your answers appropriately.**

<b>Problem</b>	<b>Grade</b>
<b>1</b>	
<b>Total</b>	

**Problem 1** (~ 10 points.).

**True or False? No explanations required.**

(1) The point  $A(7, 9, 4)$  belongs to the plane whose equation is  $x - y + z = 3$ .

(2) Consider the two planes  $P$  and  $Q$  whose equations are respectively:

$$P: x - 2y + z + 1 = 0 \quad Q: -2x + 4y - z - 3 = 0 .$$

These two planes are parallel.

(3) Consider the two planes  $P$  and  $Q$  whose equations are respectively:

$$P: -x + 2y + z + 1 = 0 \quad Q: x + z = 0 .$$

These two planes are orthogonal.

(4) The intersection of any two planes is a straight line.

(5) Consider the surface with equation  $x^2 - y^3 + x - 2y + 1 = 0$ . This surface is a quadric.

(6) Consider the quadric whose equation is  $x^2 - y^2 + z = 1$ . This quadric passes through the origin.

(7) The domain of definition of the function given by  $f(x, y) = \sqrt{1 + x^2 + y^2}$  is the set  $D = \{(x, y) \in \mathbb{R}^2 : x \geq 0 \text{ and } y \geq 0\}$ .

(8) The domain of definition of the function given by  $f(x, y) = \frac{1}{1+x^2+y^2}$  is the set  $D = \mathbb{R}^2$ .

(9) Consider the function  $f: \mathbb{R}^2 \rightarrow \mathbb{R}$  defined by  $f(x, y) = -4$ . The graph of  $f$  is a plane parallel to the  $xy$ -plane.

(10) Consider the function  $f: \mathbb{R}^2 \rightarrow \mathbb{R}$  defined by  $f(x, y) = 2y - 3x + 5$ . The graph of  $f$  is a plane that goes through the origin.