

Answer Sheet (Dr Bohan)



Name:
 ID:
 Num of attendance:

Time: 45 min

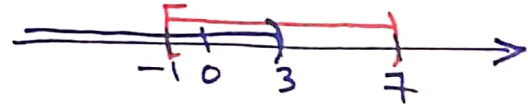
QUIZ 1 - Math 218- Semester I- 1444 H

Marks: 10

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	D	A	B	D	C	C	D	A	D

1) Choose the correct answer (write it in the table above):

1) $(-\infty, 3) \cap [-1, 7) = [-1, 3)$



- (a) $(-\infty, 7)$ (b) $[-1, 3)$ (c) $(-1, 3]$ (d) $(3, 7)$

2) $\frac{(x^{-1}y)^{-3}}{x^3y^{-4}} = \frac{x^3y^{-3}}{x^3y^{-4}} = y$

- (a) x^6y (b) $x^{-6}y^{-7}$ (c) x (d) y

3) The domain of $\frac{1}{\sqrt{6-2x}}$ is

$D = \{x \in \mathbb{R} \mid 6-2x > 0\}$
 $D = \{x \in \mathbb{R} \mid 6 > 2x\} = (-\infty, 3)$

- (a) $(-\infty, 3)$ (b) $(-\infty, 3]$ (c) $(3, \infty)$ (d) $[3, \infty)$

4) $1 + \frac{1}{x(x-2)}$ equals $\frac{[x(x-2)+1](x-2)}{x(x-2)(x-1)} = \frac{x^2-2x+1}{x(x-1)} = \frac{(x-1)^2}{x(x-1)} = \frac{x-1}{x}$

- (a) $\frac{x}{x-1}$ (b) $\frac{x-1}{x}$ (c) 1 (d) x

5) The equation of the line passing through the origin $O(0,0)$ and parallel to the line $x - y - 1 = 0$ is

$\Delta_1: y = x - 1 ; m_1 = 1$
 so $\Delta_2: y = x$

$\Delta_1 \parallel \Delta_2$
 and Δ_2 passes through O

- (a) $y = 2x$
- (b) $y = -2x$
- (c) $y = -x$
- (d) $y = x$

6) The equation of the line passing through the point $A(1,2)$ and perpendicular to the line of equation $y - x = 0$ is

$\Delta_1: y = x \quad m_1 = 1$
 $\Delta_2: y = -x + b$. As $A \in \Delta_2$ then $b = 3$
 $\Delta_2: y = -x + 3$

- (a) $y = x + 1$
- (b) $y = -x + 1$
- (c) $x + y = 3$
- (d) $x + y = -1$

7) The center of the circle with equation $(x + 2)^2 + (y + 5)^2 = 16$ is the point

- (a) $C(-5, -2)$
- (b) $C(2, 5)$
- (c) $C(-2, -5)$
- (d) $C(5, 2)$

8) If $z_1 = -2 + 2i$ and $z_2 = 1 + i$, then $\frac{z_1}{z_2}$ equals

$\frac{-2+2i}{1+i} = \frac{(-2+2i)(1-i)}{2} = \frac{-2+2i+2i+x}{2} = 2i$

- (a) $-2i$
- (b) $1 - i$
- (c) i
- (d) $2i$

9) The solution of equation $8 - 2x = -5(x - 1)$ is

$8 - 2x = -5x + 5$
 $5x - 2x = 5 - 8$
 $3x = -3$ so $x = -1$

- (a) $x = -1$
- (b) $x = 1$
- (c) $x = 2$
- (d) $x = 4$

10) The solution of $|5 - 2x| < 3$ is

$|5 - 2x| < 3 \Leftrightarrow -3 < 5 - 2x < 3$
 $-8 < -2x < -2$
 $2 < 2x < 8$
 $1 < x < 4$
 so $x \in (1, 4)$

- (a) $x \in (-8, -2)$
- (b) $x \in (-3, 3)$
- (c) $x \in (-4, -1)$
- (d) $x \in (1, 4)$

II) A) Find all the solutions (real or complex) of the equation $x^2 - 4x + 13 = 0$.

$$a = 1 ; b = -4 ; c = 13$$

$$\text{The discriminant } D = b^2 - 4ac = 16 - 4 \times 1 \times 13 = 16 - 52 = -36 = (6i)^2$$

$$\cdot X_1 = \frac{-b - \sqrt{D}}{2a} = \frac{4 - 6i}{2} = 2 - 3i$$

$$\cdot X_2 = \frac{-b + \sqrt{D}}{2a} = 2 + 3i$$

B) Solve the inequality $\frac{(2-x)(x+1)}{x-3} \geq 0$.

$$D_{\text{Ineq}} = \mathbb{R} \setminus \{3\}$$

x	-b	-1	2	3	∞
x+1	-	0	+	+	+
2-x	+	+	0	-	-
x-3	-	-	0	-	+
Quotient	+	0	-	0	+

$$S = (-\infty, -1] \cup [2, 3)$$

C) Find the coordinates of the center and the radius of the circle with equation $x^2 + y^2 + 4x - 6y + 9 = 0$.

$$x^2 + y^2 + 4x - 6y + 9 = 0$$

$$(x^2 + 4x) + (y^2 - 6y) + 9 = 0$$

$$(x+2)^2 - 4 + (y-3)^2 - 9 + 9 = 0$$

$$\text{So } (x+2)^2 + (y-3)^2 = 4 = 2^2 \text{ Eq of a circle}$$

The center is $I(-2, 3)$ and radius $R = 2$.