

**King Fahd University of Petroleum and Minerals**  
**Faculty of Science, Prep-Year Math Program**  
**Math 001 - Term 051**  
**Recitation hour (P.1)**

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**Please cover at least 4 questions**

**Question1:**

For each number, check all that apply.

	Natural	Integer	Rational	Irrational	Real	Prime	Composite	Perfect Square
1	✓	✓	✓		✓			✓
0		✓	✓		✓			✓
$\sqrt{3}$				✓	✓			
$\sqrt{4}$	✓	✓	✓		✓	✓		
$\frac{2}{3}$			✓		✓			
$\frac{1}{\pi}$				✓	✓			
3.14			✓		✓			
51			✓	✓	✓		✓	
1.333...			✓		✓			
1.121221222...				✓	✓			
105	✓	✓	✓		✓		✓	
10.5			✓		✓			

**Question2:**

Identify the property of real numbers or the property of equality that is illustrated in the following statements:

- 1)  $a(bc) = a(bc)$  Reflexive property
- 2)  $a(bc) = a(cb)$  Commutative property of multiplication
- 3) If  $x = a$  and  $a = y + 2$ , then  $x = y + 2$  Transitive property
- 4) If  $x = 3$  and  $y = x - a$ , then  $y = 3 - a$  substitution

### Question3:

Let  $A = \{x \mid x \text{ is a prime number } \leq 11\} = \{2, 3, 5, 7, 9, 11\}$

$B = \{z \mid z = x + 2, \text{ where } x \text{ is an integer number with } -1 \leq x < 5\} = \{1, 2, 3, 4, 5, 6\}$

- 1) List all elements of  $A$  and  $B$
- 2) Find  $A \cap B = \{2, 3, 5\}$

### Question4:

Write each of the following without absolute value symbols

a)  $|x-3| + |x-6|, 4 \leq x \leq 5$   $(x-3) - (x-6) = 3$

b)  $\left| \frac{x}{|x| + |x+3|} \right|, -3 < x < 0$   $\left| \frac{x}{-x+x+3} \right| = \left| \frac{x}{3} \right| = -\frac{x}{3}$

### Question5:

TRUE or FALSE

- 1)  $-\frac{1}{\pi}$  is the multiplicative inverse of  $\pi$ . **F**
- 2) 0, 1, 2, 3, 4, ... are positive integers. **F**
- 3) Any integer is either prime or composite. **F**
- 4) The operation of division of real numbers is commutative. **F**
- 5) The multiplicative inverse of  $-2\frac{2}{3}$  is  $-\frac{3}{4}$ . **F**
- 6) If  $x$  is any real number, then  $|-x| = x$ . **F**
- 7) If  $x$  is any real number, then  $|-x^2 - 1| = x^2 + 1$ . **T**
- 8) If  $x < 0$ , then  $|-x| = -x$ . **F**
- 9) The inequality  $x \leq -5$  or  $2 < x \leq 6$  can be written in interval notation as  $(-\infty, -5] \cup (2, 6]$ . **F**
- 10) If the distance between a real number  $x$  and  $-3$  is not more than 8, then  $|x+3| \leq 8$ . **T**