

**KING FAHD UNIVERSITY OF PETROLUUM AND MINERALS**  
**Prep Year Math Program**  
**Math 001 Term 032**

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**Name:**

**ID#:**

**Section:**

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**Question1 (P1 & P.2):**

- a) If  $A = \{y \mid x = x - |x|, \text{ where } x \text{ is an integer and } -2 \leq x < 3\}$ , then list all elements of  $A$ .
- b) If  $x \leq -4$  or  $2 < x \leq 5$ , then write equivalent interval notation.
- c) Write the expression  $\frac{|x+2|}{x+2}, x < 2$  without the absolute value notation.

**Question2 (P.3)**

- a) Find the exact value of  $\sqrt{(-8)^2} + \left(-\frac{1}{32}\right)^{\frac{3}{5}}$
- b) Simplify then combine like radicals  $3x\sqrt[3]{8x^3y^4} - 2y\sqrt[3]{27x^6y}$
- c) Rationalize the denominator of  $\frac{1}{\sqrt[3]{24}} - \frac{4}{\sqrt[3]{3}} - \frac{2}{\sqrt[3]{81}}$

**Test I [Code 001]**

**Question3 (P.4)**

Given the polynomial  $(2x - y)^3 + (x^2 + 2y)(x^2 - 2y)$

1. Write this polynomial in the standard form.

2. The coefficient of  $xy^2$  is

**Question4 (P.5 and P.6)**

a) Factor  $x^2 + x - 9y^2 + \frac{1}{4}$

b) Simplify. The answer must be in the **simplest** form.

1)  $\frac{5x}{2x+3} - \frac{6}{2x^2+3x} + \frac{2}{x}$

2)  $\frac{\frac{x}{y^2} - \frac{y}{x^2}}{\frac{1}{y^2} - \frac{1}{x^2}}$

**Test I [Code 001]**

**Question5 (1.1 and 1.2)**

a) True or False. **Justify** your answer.

1)  $\frac{4x+3}{2} = 2x+3$  is an identity.

2) The equation  $2|2x-1|+10=4$  has two real solutions.

b) Solve the equations  $a = \frac{2bc}{b-c}$ , for  $c$ .

c) Find two consecutive natural numbers such that the difference of their reciprocals is  $\frac{1}{4}$  the reciprocal of the smaller num

d) ber.

**Test I [Code 001]**

**Question6 (1.3)**

a) If  $Z = \frac{i^{35} - \sqrt{-2}\sqrt{-8}}{(1-2i)^2}$ , then write  $Z$  in the standard form.

b) Solve  $3x^2 - 9x + 3 = x + 2$  by completing the square