

**King Fahd University of Petroleum and Minerals**  
**College of Sciences Math Prep-Year Program**  
**Math 001-Term 071**

Name: KEY SEL SEC \_\_\_\_\_ ID#: \_\_\_\_\_ SR# \_\_\_\_\_

Q1. Which one of the following polynomials matches the graph:

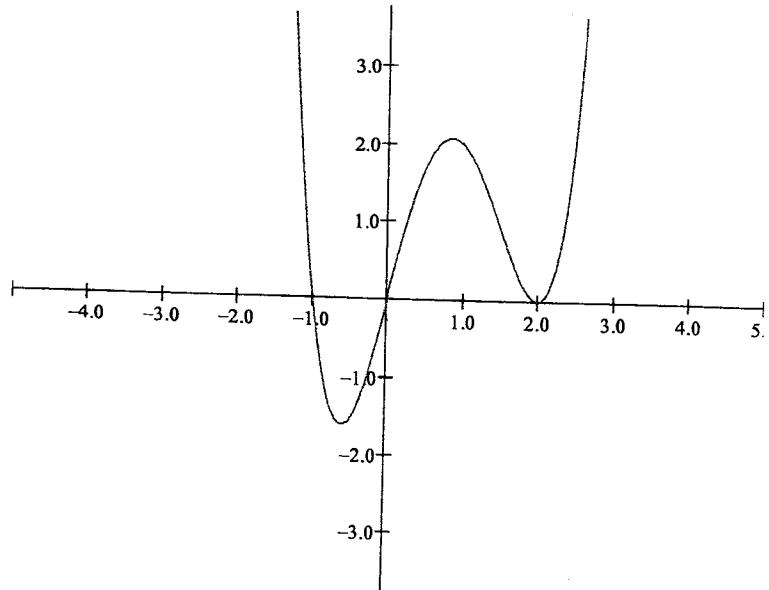
a.  $P(x) = x(x+1)(x-2)^2$

b.  $P(x) = -x^2(x+1)(x-2)$

c.  $P(x) = -x(x+1)^2(x-2)$

d.  $P(x) = (x+1)^2(x-2)^2$

e.  $P(x) = -x(x+1)(x-2)^2$



Q2. If the remainder of dividing  $P(x) = x^4 - 8x^2 - kx + 1$  by  $x + 2$  is 3. Then  $P(-1)$  is equal to:

a. 6

b. 3

c. 4

d. -3

e. 0

Q3. The sum of all rational zeros of the polynomial  $P(x) = 2x^4 - 19x^3 + 51x^2 - 31x + 5$  is:

a) 0

b) -5

c)  $\frac{11}{2}$

d)  $-\frac{17}{2}$

e)  $\frac{1}{2}$

Q4. The polynomial  $P(x) = 3x^3 + 7x^2 + 3x + 7$  has at least one real zero in the interval:

a.  $[-1, 0]$

b.  $[-2, -1]$

c.  $[-3, -2]$

d.  $[0, 1]$

e.  $[1, 2]$

Q5. If  $(1-i)$  is a zero of  $P(x) = x^4 - 7x^3 + 18x^2 - 22x + K$ , then the value of  $K$  is equal to:

- a.  $-12$       b.  $12$       c.  $\frac{1}{12}$       d.  $0$       e.  $\frac{-1}{12}$

Q6. The graph of  $p(x) = -2x^4 + 8x^2$  is below the  $x-axis$  on the interval:

- a)  $(-2, 0) \cup (0, 2)$     b)  $(-2, 2)$     c)  $(-\infty, -2) \cup (0, 2)$     d)  $(-\infty, -2) \cup (2, \infty)$     e)  $(-2, 0) \cup (2, \infty)$

Q7. The polynomial  $p(x)$  of lowest degree with real coefficients that has zeros  $i$  (multiplicity 2), and  $3$  is

- a)  $p(x) = x^5 - 3x^4 + 2x^3 - 6x^2 + x - 3$   
b)  $p(x) = x^5 - 3x^4 + 2x^3 - 6x^2 - x - 3$   
c)  $p(x) = x^5 - 3x^4 - 2x^3 + 6x^2 + x - 3$   
d)  $p(x) = x^5 + 3x^4 + 2x^3 - 6x^2 - x - 3$   
e)  $p(x) = x^5 + 3x^4 + 2x^3 + 6x^2 + x - 3$