

King Fahd University of Petroleum and Minerals
Faculty of Science – Prep-Year Math Program
Math 001 - Term 032
Recitation Hour (3.3 & 3.4)

Multiple choice Questions

1. If $x = -1$ is a zero with multiplicity 2 of the polynomial

$$P(x) = x^4 + x^3 + x^2 + kx + k - 1, \text{ then } k =$$

- a) 3
- b) 2
- c) 1
- d) 0
- e) -1

2. According to Descartes' Rules of Signs, the number of possible positive and negative real zeros of the polynomial

$$P(x) = 5x^4 + x^3 + 3x^2 - 3x - 1 \quad \text{are}$$

- a) one positive and three negative zeros
- b) one positive and either three or one negative zeros
- c) one positive and one negative zeros
- d) one negative and either three or one positive zeros
- e) one negative and three positive zeros

3. According to the Upper- and Lower-Bound Theorem, the largest negative integer that is a lower bound for the real zeros of the polynomial

$$P(x) = 3x^3 - x^2 - 2x + 10 \text{ is}$$

- a) -1
- b) -2
- c) -3
- d) -4
- e) -5

4. If i is a zero of $P(x) = 8x^5 - 12x^4 + 14x^3 - 13x^2 + 6x - 1$, then the other zeros are

- a) one nonreal and one rational zero with multiplicity 3
- b) one nonreal, one rational, and two integer zeros
- c) one nonreal, one rational, and two irrational zeros
- d) one nonreal and three integer zeros
- e) four nonreal zeros

5. A polynomial $P(x)$ of lowest degree and real coefficient that has zeros 0 (of multiplicity 3), $2i$, and i is

- a) $P(x) = x^7 + 9x^5 + 4x^3$
- b) $P(x) = x^7 + 5x^5 + 4x^3$
- c) $P(x) = x^7 + 5x^5 + 11x^3$
- d) $P(x) = x^5 - 3ix^4 - 2x^3$
- e) $P(x) = x^5 + 3ix^4 + 2x^3$