

King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 001 - Term 131

Recitation (3.2)

Question 1: The remainder is zero when $P(x) = x^7 + 30x^2 + K$ is divided by $x + 2$, then K is equal to:

- A) 248 B) 28 C) 68 D) 78 C) 8

Answer: $K = 8$

Question 2:

From the synthetic division

| | | | | | |
|-----|-----|-----|-----|---------|----------------------------|
| i | 1 | i | m | 2 | where $i = \sqrt{-1}$, of |
| | | i | n | w | |
| | k | l | t | $2 + i$ | |

some polynomial $p(x)$ by $x - i$, then the quotient is equal to:

- a) $ix^2 + 1$
- b) $x^2 + 2ix$
- c) $x^2 + 2ix + 1$
- d) $x^2 + 2ix + i$
- e) $ix^2 + 2ix - 1$

Answer: (c): The quotient polynomial is $q(x) = x^2 + 2ix + 1$

Question 3: If $x^{101} - x^{96} + 1$ is divided by $x - i$, then the remainder is:

- a) 1
- b) $1 - 2i$
- c) $1 + 2i$
- d) $2 + i$
- e) i

Answer: (e): Remainder = $f(i) = i$

Question 4:

If $P(x) = 211x^4 - 212x^3 + 212x^2 + 210x - 3$, find the value of $P\left(\frac{1}{211}\right)$

Answer: $P\left(\frac{1}{211}\right) = -2$.

Question 5:

Use long Division to divide $p(x) = x^5 - 2x^2 + 4x - 24$ by the polynomial $D(x) = x + 2$, and write your answer in the form $p(x) = (x - k)q(x) + r$

Answer: $p(x) = (x + 2)(x^4 - 2x^3 + 4x^2 - 10x + 24) - 72$