King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math 001 - Term 141
Recitation (3.2)
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Question 1: Divide $p(x) = x^4 - 2x^2 + 4x - 24$ by the polynomial $D(x) = x + 2$, and write your answer in the form $p(x) = (x - k)q(x) + r$

Answer: $\qquad p(x) = (x + 2)\left(x^3 - 2x^2 + 2x\right) - 24$

Question 2:

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

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

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: The correct answer is (e).

Question 4:

From the synthetic division

$$
\begin{array}{c|cccc}
i & 1 & i & m & 2 \\
  &   & i & n & w \\
\hline
  & k & l & t & 2+i
\end{array}
$$

where $i = \sqrt{-1}$, of

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: The correct answer is (c).

Question 5:

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: $\quad p(x) = (x + 2)\left(x^4 - 2x^3 + 4x^2 - 10x + 24\right) - 72$