King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (181)
Recitation (3. 3)

Question 1: When x^3-3x^2-x-1 is divided by $x-k$ and the remainder -4, then the sum of all values of k is:

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

Answer: (a): The sum is 3

Question 2: If $P(x)=x^{105}-x^{10}-2x+1$ is divided by $x+1$, then the remainder is:

(a): 2 (b): 1 (c): -1 (d): 0 (e): -2

Answer: (b): 1

Question 3: If $x+2$ is a factor of polynomial $P(x)=x^3-kx^2+3x+7k$, then k is equal to

(a): $\frac{10}{3}$ (b): $\frac{13}{3}$ (c): $\frac{11}{3}$ (d): $\frac{16}{3}$ (e): $\frac{14}{3}$

Answer: (e): $\frac{14}{3}$

Question 4: If $P(x)=-x^3+kx^2-5x-20$ is divided by $x+2$, then the set of all values of k which makes the remainder positive is

(a): $\left(\frac{9}{2},\infty\right)$ (b): $\left(\frac{19}{2},\infty\right)$ (c): $\left(\frac{11}{2},\infty\right)$ (d): $\left(\frac{1}{2},\infty\right)$ (e): $\varnothing$

Answer: (d): $\left(\frac{1}{2},\infty\right)$

Question 5: If 2 is a zero of multiplicity 2 of $P(x)=x^4+\boldsymbol{a}x^3+8x^2-16x+\boldsymbol{b}$ then find $\boldsymbol{a}$ and $\boldsymbol{b}$.

Answer: $\boxed{a=-4}$ $\boxed{b=16}$

Question6: If $\frac{2x^5+x^3-2x^2+3x-5}{x^2-3x+1}=Q(x)+\frac{R(x)}{x^2-3x+1}$, then what are $Q(x)$ and $R(x)$?

Answer: $Q(x)=2x^3+6x^2+17x+43$ $R(x)=115x-48$