King Fahd University of Petroleum and Minerals

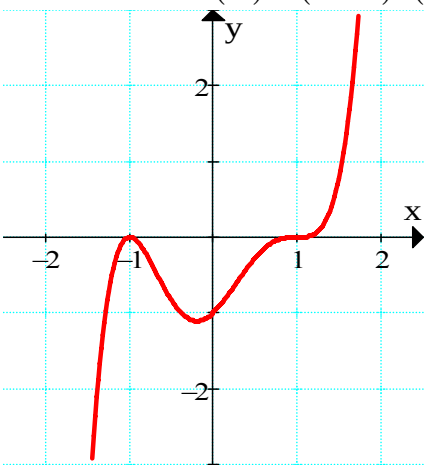
Prep-Year Math Program

Math 001 - Term 131

Recitation (3.4)

Question 1: Sketch the graph of the polynomial $P(x)=(x^2-2x+1)(x^2-1)(x+1)$

Answer: $P(x)=(x-1)^2(x-1)(x+1)(x+1)=(x-1)^3(x+1)^2$



Question 2: Show that $P(x)=x^3-2x^2-x+1$ has a real zero between 2 and 3

Solution:

$P(2)=2^3-2(2)^2-2+1=8-8-2+1=-1<0$

$P(3)=3^3-2(3)^2-3+1=27-18-3+1=28-21=7>0$

By intermediate value theorem there is a zero between 2 and 3.

Question 3:

The function $P(x)=2x^3+3x^2-23x-41$ has a real zero in the interval

a) $[0,1]$

b) $[1,2]$

c) $[2,3]$

d) $[3,4]$

e) $[4,5]$

Question 4: The function $P(x)=x^2(x-3)^3(x+1)$ has

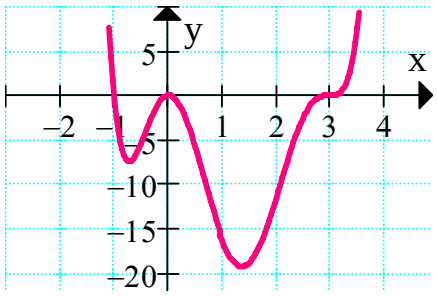
a) Two turning points below x – axis and one turning point above x-axis

b) Two turning points above x – axis and one turning point below x-axis

c) Three turning points above x – axis.

d) Two turning points above x – axis and one turning point on the x-axis

e) Two turning points below x – axis and one turning point on the x-axis



Question 5: Which one of the following polynomial 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) $p(x)=-x(x+1)(x-2)^2$

Answer: (a)