MAC 1140

LA session

Week 3

1. Factor completely

a) $3x^3-18x^2-48x$

b) x^3-2x^2-x+2

c) x^6-2x^3+1

d) $2(x+1)^4(2x-3)^3-4(x+1)^3(2x-3)^4$

e) $8x^3-27$

2.Use synthetic division to find the quotient and remainder when $-2x^3+3x^2-1$ is divided by $x+2$

3. Use synthetic division to determine whether $(x-2)$ is a factor of $x^3 - 5x^2+7x - 2$

4. Use the Remainder Theorem to find the remainder when $f(x) = 2x^5 -3x^4 + 5x^2 -3x+4$ is divided by $x+1$.

5. How are the zeros of a function defined? What is the maximum number of real zeros that a polynomial function can have? How many real zeros can the function $f(x) = 3x^6 - 3x^4 - 4x^3 + 7x - 2$ have?

6. List all potential rational zeros of each polynomial function. Do not attempt to find the zeros.

a) $f(x) = -2x^5 +x^4 - 3x^2 + 7x +15$

b) $f(x) = 3x^4 + 2x^3 - 8$

7. Find all real zeros of each polynomial function and use them to factor each function over the real numbers.

a) $f(x) = 2x^4+3x^3-8x^2-9x+ 6$

b) $f(x) = x^5 -2x^4 -2x^3 -2x^2 -3x$

8. Find real solutions of the following equations

a) $x^3-2x + 1 = 0$

b) $4x^4 - 12x^3 + 11x^2 -3x = 0$