**Exercise: (College algebra 4th by Raymond D. Barnett Michal R. Ziegler)**

**Q1. Using algebraic long division to find the following:**

ii) iii) iv) v) vi) .

**Q2. Using synthetic division to write the polynomial in the form**

i) ii) iii) iv) v)

**Q3. Using synthetic division and remainder theorem to find the following:**

i) find .

ii) , find.

iii) , find.

**Q4. Write as a product of first degree factors**

i) -1 is a zero.

ii) 1 and -1 are zero.

ii) is a zero.

iv) 3 is a double zero.

**Q5. Find all other zeros of , given the indicated zero.**

i is one zero.

ii) is one zero.

iii) is one zero.

**Q6. Find the upper and lower bounds, for the real zero of the following polynomials.**

.

ii)

iii)

**Q7. Find the following foe each polynomial**

1) what is the degree of each polynomial.

2) write the zero of each polynomial.

3) indicate the multiplicity of each zero.

i)

ii)

**Q8. What are the possible combinations of real and imaginary zero?**

i

ii)

iii)

iv)

**Q9. Construct a table showing the possible combinations of positive, negative and imaginary zeros using Descartes rule of signs.**

i

ii)

iii)

**Q10. Find the smallest positive integer and the largest negative integer using upper and lower bound theorem.**

i

ii)

iii)

**Q11. Show that, for each given polynomial, there is at least one real zero between the given values of and .**

i

ii

iii

**Q12. Find all roots (rational, irrational and imaginary) for each polynomial equation.**

i

ii)

iii

**Q13. For each polynomial,**

**(a) list all possible rational zeros (b) find all rational roots.**

i)

ii)

iii)