

7.4 The Remainder and Factor Theorems

1. Evaluate functions using synthetic substitution,
2. Determine whether a binomial is a factor of a polynomial by using synthetic substitution.

Synthetic Substitution

When synthetic division is used to evaluate a function, it is called *synthetic substitution*. It is an easy way of finding the value of a function.

Review synthetic division: Divide $4x^4 - 2x^2 - 3x + 6$ by $x - 2$

Factors of Polynomials

Is $x - 2$ a factor of $x^3 - 3x^2 - 6x + 8$?

b) $x - 4$? c) $x + 4$? d) $x + 2$? e) $x + 1$?

If the remainder = 0, then it is a factor!!!

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

b) $x - 4$

c) $x + 4$

d) $x + 2$

e) $x + 1$

Show that $x + 3$ is a factor (zero) of $x^3 + 6x^2 - x - 30$. Find the remaining factors.

Homework

p. 368 #13-31 odd