Honors Algebra II

Notes Section 2.5

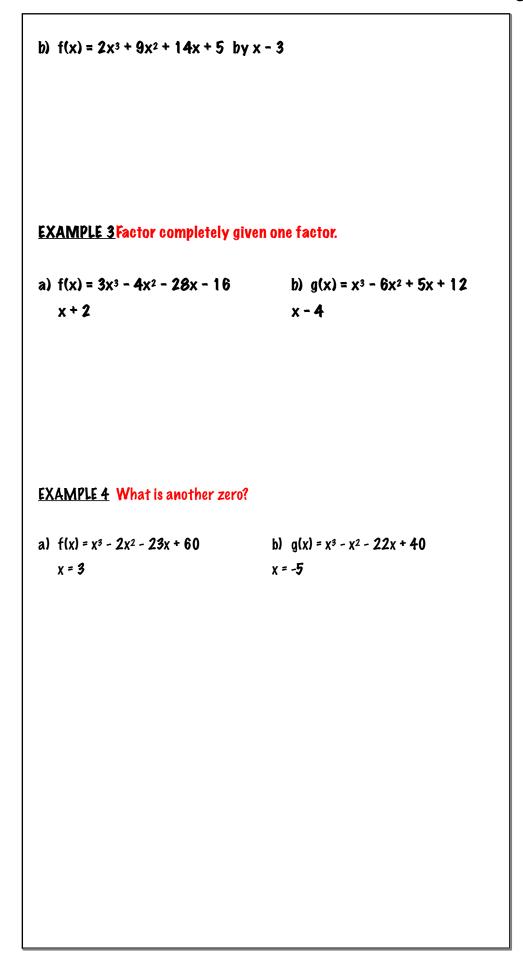
Apply the Remainder and Factor Theorems

EXAMPLE 1 Divide using long division.

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

b) $f(x) = 3x^4 - 5x^3 + 4x - 6$ by $x^2 - 3x + 5$

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c) (2x^4 + x^3 + x + 1) \div (x^2 + 2x - 1)
<u>Remainder Theorem</u>: using synthetic division with a linear divisor.
                       The last value = remainder.
<u>Factor Theorem</u>: if the remainder = 0, then x-k is a factor.
EXAMPLE 2 Divide using synthetic division.
a) f(x) = 2x^3 + x^2 - 8x + 5 by x + 3
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EXAMPLE 5 The profit P (in millions) for a shoe manufacturer can be modeled by $P = -21x^3 + 46x$ where x is the number of shoes produced (in millions). The company now produces 1 million shoes and makes a profit of \$25,000,000, but would like to cut back production. What lesser number of shoes could the company produce and still make the same profit?