LESSON 4.3 Assignment

Name _____ Date _____

The Factors of Life

The Factor Theorem and Remainder Theorem

1. Given: $\frac{f(x)}{(x - 3)} = x^2 - 7x - 13\ R\ 25$.

a. Determine $f(3)$ using the Remainder Theorem. Explain your reasoning.

b. Determine $f(x)$.

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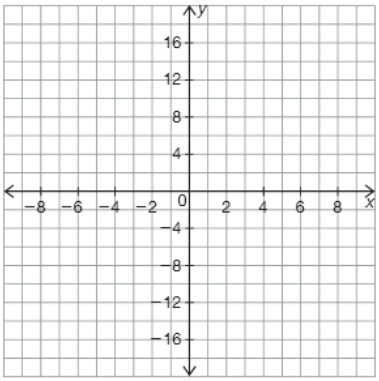
c. Determine whether $x - 8$ is a factor of $f(x)$. Explain your reasoning.

d. Determine $f(8)$ using the Factor Theorem. Explain your reasoning.

e. Completely factor $f(x)$.

2. Given: $\frac{g(x)}{x-1} = x^2 + x - 8\ R\ -8$, $\frac{g(x)}{x-2} = x^2 + 2x - 5\ R\ -10$, and $\frac{g(x)}{x-3} = x^2 + 3x\ R\ 0$. The function $g(x)$ is cubic and its graph is symmetric about the origin. Use the given information and the Remainder Theorem to sketch the graph of $g(x)$ on the coordinate plane provided. Explain each step.



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3. The function $m(x) = 2x^2 + 6x - 7$ generates the same remainder when divided by $(x - a)$ and $(x - 2a)$ when $a \neq 0$. Calculate the value(s) of a and determine the corresponding factors.