Name _____

HW L2.7

1. Let $f(x) = (x^2 + 3x - 5)(-8x - 2)$.

   a. What is the degree of f?

   b. What is the y-intercept of the graph of $y = f(x)$?

   c. Write $f(x)$ in standard form.

2. The expression $x + 5$ is a factor of a polynomial f. Which of the following is true?

   A) $f(-5) = 0$

   B) $f(5) = 0$

   C) $\dfrac{f(x)}{x + 5}$ has a remainder of -5.

   D) $\dfrac{f(x)}{x - 5}$ has no remainder.

3. Write the polynomial function $f(x) = (x - 6)(x - 4i)(x + 4i)$ in standard form. Identify the zeros of the function and the x-intercepts of its graph.

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4. One factor of $f(x) = x^3 + 2x^2 - 5x - 10$ is $x + 2$. Find the other two factors. Write answers in exact, not approximate, form.

5. Let $g(x) = -5x^4 - 2x^3 + 9x^2 - 8x + C$, for some constant C. Find the value of C so that $x - 1$ is a factor of $g(x)$.

6. The function $f(x) = x^3 + 4x^2 + 25x + 100$ has an x-intercept at $x = -4$. Factor f completely over the complex numbers.

7. A quadratic function of the form $y = x^2 + bx + c$ has zeros at $x = 4 \pm 7i$. Find b and c.

8. Consider the function $f(x) = x^4 - 6x^3 + 2x^2 + 26x + 17$.

   a. Use your graphing calculator to find any real zeros of f. State their multiplicity.

   b. Find the remaining zeros of f.

   c. Write f in factored form.