AP Calculus AB
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Activity 0826
Monday, August 26, 2024

Name:

Problem 1. (Dividing Polynomials)
Let $g(x) = x^3 - 3x^2 + 2x - 7$ and $f(x) = x - 5$. Find the quotient and remainder when g is divided by f.

Problem 2. (Synthetic Division)
Use synthetic division to find the value of the given function at the given point.

(a) $f(x) = x^3 - 11x^2 + 34x - 13$ at $x = 5$

(b) $f(x) = 3x^5 + 16x^4 - 15x^3 - 22x^2 - 23x - 4$ at $x = -6$

(c) $f(x) = x^6 + 4x^5 - 5x^4 - 4x^3 - 14x^2 + 35x + 28$ at $x = -5$

Problem 3. (Dividing Polynomials)
Let $g(x) = x^4 + x^3 - 3x^2 + 2x - 7$ and $f(x) = x^2 - 5x + 2$. Find the quotient and remainder when g is divided by f.

Problem 4. (Factor by Synthetic Division)
Let

$$f(x) = x^3 - 2x^2 - 19x + 20.$$

Note that $f(1) = 0$. Let $q(x)$ be the quotient when $f(x)$ is divided by $x - 1$.

(a) Use synthetic division to find $q(x)$.

(b) Use completing the square or the quadratic formula to find the zeros of $q(x)$.

(c) Solve the equation $f(x) = 0$. Correctly write the solution set.