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**Advanced Functions and Modeling Unit 10 Homework 1**

**Show all of your work on a separate sheet of paper.**

**Find the quotient and remainder using long division.**

1. $\left(3x^{5}+5x^{4}-4x^{3}+7x+3\right)÷(x+2)$ 2. $\left(x^{3}+6x+5\right)÷(x-4)$

**Find the quotient and remainder using synthetic division.**

3. $\left(x^{3}-9x^{2}+x^{2}-x+2\right)÷(x-2)$ 4. $\left(3x^{3}-12x^{2}-9x+1\right)÷(x-5)$

**Find a polynomial of the specified degree that has the given zeros.**

5. Cubic; zeros at $-1, 1, 3$ 6. Quartic; $-2, 0, 2, 4$

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