Name: _____ Date: _____

| **Learning Goal 3.2** | Factoring, including the factor theorem and the remainder theorem. |
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**More Questions**

1. Use the Remainder Theorem to find the remainder of the following.
   a. $(6x^2 - 10x + 7) \div (3x + 1)$ b. $\dfrac{-4x^3 - 9x + 10}{1 - 2x}$ c. $11x - 4x^4 - 7$ by $x - 3$

2. For each dividend, determine the value of $k$ if the remainder is $-2$.
   a. $(2x^3 - 5x^2 - 4x + k) \div (x + 1)$ b. $(x^3 - 4x^2 + kx + 10) \div (x - 3)$

3. For what value of $m$ will the polynomial $P(x) = x^3 + 6x^2 + mx - 4$ have the same remainder when it is divided by $x - 1$ and $x + 2$?

4. You can model the volume, in cubic centimetres, of a rectangular box by the polynomial function $V(x) = 3x^3 + x^2 - 12x - 4$. Determine expressions for the other dimensions of the box if the height is $x + 2$.