Remainder Theorem

Name: _____ Period: _____ Date: _____

1. Define the Remainder Theorem in your own words. After completing #'s 2-5, create your own example to demonstrate your definition.

2. Use polynomial division to determine the remainder.

$$(4x^2 + 3x - 1) \div (x - 3)$$

Now, considering the Remainder Theorem, solve $p(3)$ to see if your remainder is correct.

$$p(x) = 4x^2 + 3x - 1$$

3. Use polynomial division to determine the remainder.

$$(x^3 + x^2 - 5x - 6) \div (x - 2)$$

Now, considering the Remainder Theorem, solve $g(2)$ to see if your remainder is correct.

$$g(x) = x^3 + x^2 - 5x - 6$$

4. Use polynomial division to determine the remainder.

$$(-x^3 + 6x - 7) \div (x - 2)$$

Use the Remainder Theorem to determine if your remainder is correct.

$$f(x) = -x^3 + 6x - 7$$

5. Use polynomial division to determine the remainder.

$$(x^5 + 6x^4 - 3x^2 - 22x - 29) \div (x + 6)$$

Use the Remainder Theorem to determine if your remainder is correct.

$$h(x) = x^5 + 6x^4 - 3x^2 - 22x - 29$$

6. Perform the indicated division. Write your answer in the following form:
(divisor)(quotient) + remainder

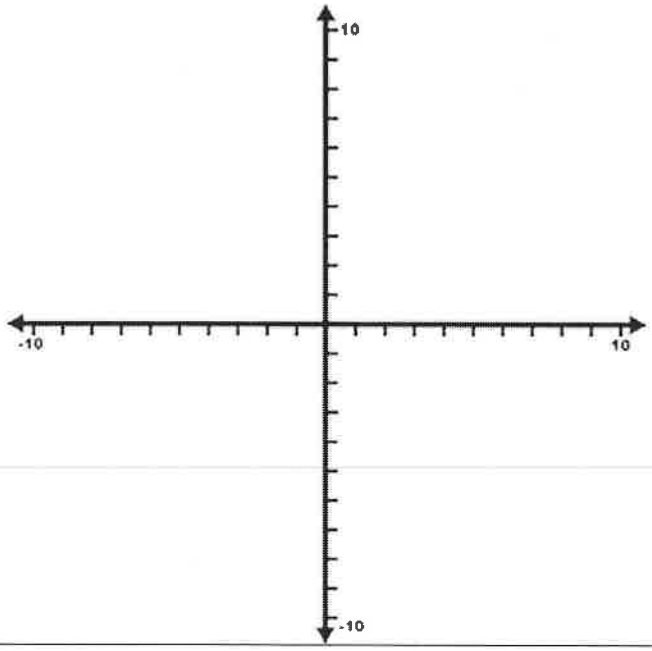
$$\frac{3x^3 - 6x^2 + 4x - 8}{x - 2}$$

7. Perform the indicated division. Write your answer in the following form:
(divisor)(quotient) + remainder

$$(2x^3 - x + 6) \div (x + 3)$$

8. Completely factor $m(x)$ and sketch its graph on the coordinate plane provided.

$$m(x) = x^3 - 5x^2 - x + 5$$



9. Completely factor $q(x)$ and sketch its graph on the coordinate plane provided.

$$q(x) = x^4 + 6x^3 + 9x^2$$