HN Math III: Unit 3 – Day 4 HOMEWORK

Name ____________________

PART 1: Divide the following polynomials.

1. $(2x^3 - 7x^2 - x - 12) \div (x - 4)$

$\boxed{2x^2 + x + 3}$

2. $(x^3 - 2x + 12) \div (x + 3)$

$\boxed{x^2 - 3x + 7 + \frac{-9}{x+3}}$

3. $(x^4 - 5x^3 + 4x - 17) \div (x - 5)$

$\boxed{x^3 + 4 + \frac{3}{x-5}}$

4. $(3x^3 - 2x^2 + 5x - 1) \div (3x + 1)$

$\boxed{x^2 - x + 2 + \frac{-3}{3x+1}}$

5. $(5x^4 - 2x^3 - 3x^2 + 5x + 1) \div (x - 1)$

$\boxed{5x^3 + 3x^2 + 5 + \frac{6}{x-1}}$

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

$\boxed{3x^2 + 2x - 12 + \frac{-8x+19}{x^2+4}}$

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

$\boxed{x^2 - x + 1 - \frac{3}{x+1}}$

8. $(3x^4 - 1) \div (x - 2)$

$\boxed{3x^3 + 6x^2 + 12x + 24 + \frac{47}{x-2}}$

PART 2: Using the ***Remainder Theorem***, determine if the following binomial $b(x)$ are factors of $p(x)$.

1. $p(x) = 2x^4 - 2x^3 - x^2 + 11x - 10,\ b(x) = x - 1$

yes

2. $p(x) = x^3 + 7x^2 + 14x + 3,\ b(x) = x + 2$

no

3. $p(x) = x^3 + 13x^2 + 42x + 54,\ b(x) = x + 9$

yes