

Name: _____

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Worksheet - Sep. 19

MAT 3501

Fall 2017

1. (like pbs. 4 and 5, section 2.7.) In each of the following, the given function is asymptotic to a curve when $|x|$ is large. Find that curve and justify the asymptotic behavior.

(a) $f(x) = \frac{3x^2 + 5x}{x - 2}$

(b) $g(x) = \frac{3x^4 + 5x^3}{x^2 - 2}$

2. (like pb. 6, section 2.7.) Find the remainder of $x^{2017} - 1$ when divided by $x^2 - 4x + 3$.

3. Let $f(x)$ be a polynomial leaving remainder A when divided by $x - a$ and the remainder B when divided by $x - b$, $a \neq b$. Find the remainder when $f(x)$ is divided by $(x - a)(x - b)$.

4. What is the greatest common divisor of $x^n - 1$ and $x^m - 1$? Justify your answer.