SM3 Unit2 Review   Name:_____

2.1   1) Write $f(x) = 8x + 3x^8 - 2x^5$ in descending order.

How many terms does $f(x)$ have?
What degree is $f(x)$?
What is the lead coefficient of $f(x)$?

2) Write $g(x) = 1 - 9x$ in descending order.

How many terms does $g(x)$ have?
What degree is $g(x)$?
What is the lead coefficient of $g(x)$?

3) Write $p(x) = 2x^7 + x^5 - 3x^9$ in descending order.

How many terms does $p(x)$ have?
What degree is $p(x)$?
What is the lead coefficient of $p(x)$?

4) Simplify: $(3x^2 + 3) - (8x^2 - 2x)$

5) Simplify: $(7x + 4x^2 + 5) + (x^2 + 3)$

6) Simplify: $(2x - 9)^2$

7) Simplify: $(5x^2 - 3)(x + 10)$

2.2   8) Expand the binomial: $(x + 2)^5$

9) Expand the binomial: $(2x + 5)^3$

10) The a^5 term of the binomial expansion of $(a - 5)^9$ is given by which expression?

11) The a^5 term of the binomial expansion of $(3a + 1)^8$ is given by which expression?

2.3 12) Divide using Long Division:

$$\frac{x^2 + 11x + 28}{x + 5}$$

$$\frac{2x^3 - x - 5}{x - 2}$$

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

2.4 13) What is the dividend polynomial?

$$\begin{array}{c|ccc} 6 & 1 & -2 & 7 \\ & \downarrow & 6 & 24 \\ \hline & 1 & 4 & 31 \end{array}$$

14) What is the divisor polynomial?

15) Interpret the results of the synthetic division.

16) What is the remainder of $\quad \dfrac{3x^3 + x^2 - 5x - 7}{x - 2}$

19) Use synthetic division to simplify:

$$\frac{x^5 - 7x^4 + 2}{x - 3}$$

20) Is $(x - 5)$ a factor of $x^3 - 3x^2 - 3x - 35$
Show your work.

21) Find $f(4)$ if $f(x) = x^3 - 5x - 20$
Show your work.

22) Find $f(-2)$ if $f(x) = 2x^2 + 2x - 5$
Show your work.