Secondary Math III
Unit 2 Review

Name KEY
Period _____

1. Write the following polynomial in standard form and state the degree $6x^3+5x^7-2x^9+4x^2+5$

$-2x^9+5x^7+6x^3+4x^2+5$ Degree = 9

2. What kind of polynomial is x^2+3x+2? (circle all that apply)

a) linear b) cubic c) quadratic d) constant

e) monomial f) Binomial g) trinomial e) polynomial

Complete the polynomial operation. *(Lesson 6.1, 6.2, 6.3, 6.5)*

3. $(8x^3-2x^2-4x+8)+(5x^2+6x-4)$

$8x^3+3x^2+2x+4$

4. $5x(x+2)(3x-7)$

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

$=15x^3-35x^2+30x^2-70x$

$=\boxed{15x^3-5x^2-70x}$

5. $(-4x^2-2x+8)-(x^2+8x-5)$

$-5x^2-10x+13$

6. $(3x^3+12x^2+11x-2)\div(x+2)$

-2	3	12	11	-2
		-6	-12	2
	3	6	-1	0

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

7. $(x+y)^6$

$x^6y^0+{}_6C_1x^5y^1+{}_6C_2x^4y^2+{}_6C_3x^3y^3+{}_6C_4x^2y^4$
$+{}_6C_5x^1y^5+{}_6C_6x^0y^6$

$=x^6+6x^5y+15x^4y^2+20x^3y^3+15x^2y^4+6xy^5+y^6$

8. $(5x+y)^4$

$625x^4+500x^3y+150x^2y^2+20xy^3+y^4$

9. $(4x^2+3x+2)(3x^2+2x-1)$

$=12x^4+8x^3-4x^2+9x^3+6x^2-3x+6x^2+4x-2$

$=12x^4+17x^3+8x^2+x-2$

10. $(57x^{18}-x^2)-(6x-71x^3+5x^2+2)$

$57x^{18}+71x^3-6x^2-6x-2$

11. $(9x^4+x^3+11x^2-4)\div(x^2+16)$

$9x^2+x-133$

$x^2+0x+16 \overline{)\,9x^4+x^3+11x^2+0x-4}$

$-(9x^4+0x^3+144x^2)$

x^3-133x^2+0x

$-(x^3+0x^2+16x)$

$-133x^2-16x-4$

$-(-133x^2-0x-2128)$

$=16x+2124$

$\boxed{9x^2+x-133-\frac{16x+2124}{x^2+16}}$

12. $(16-x^2)+(-18x^2+7x^5-10x^4+5)$

$7x^5-10x^4-19x^2+21$

Factor the polynomial. *(Lesson 6.4)*

13. $3x^2 + 4x - 4$

$(x+2)(3x-2)$

14. $2x^3 + 4x^2 - 30x$

$2x(x-3)(x+5)$

15. $9x^2 - 25$

$(3x+5)(3x-5)$

16. $4x^2 - 16x + 16$

$4(x-2)^2$

17. $x^3 + 8x^2 + 6x + 48$

$(x+8)(x^2+6)$

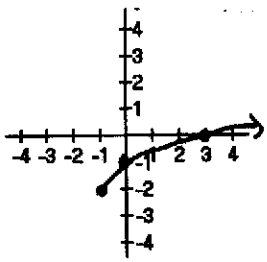
18. $8x^4 + 8x^3 + 27x + 27$

$(x+1)(2x+3)(4x^2-6x+9)$

Review

Graph the following functions **without** using a calculator. Next, identify the parent function, list the transformations involved, and also include the new domain and range.

19. $g(x) = \sqrt{x+1} - 2$



Parent Function: $\sqrt{x}$

Domain: $[-1, \infty)$

Range: $[-2, \infty)$

x-int: $(3, 0)$

y-int: $(0, -1)$

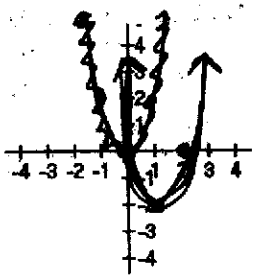
Left EB: —

Right EB: $\lim_{x \to \infty} f(x) = \infty$

Inc: $(-1, \infty)$

Dec: —

20. $h(x) = 2(x-1)^2 - 2$



Parent Function: x^2

Domain: $(-\infty, \infty)$

Range: $[-2, \infty)$

x-int: $(0, 0)$ $(2, 0)$

y-int: $(0, 0)$

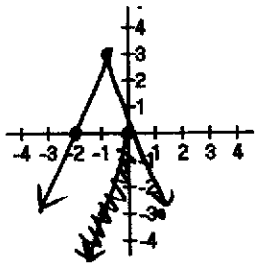
Left EB: $\lim_{x \to -\infty} f(x) = \infty$

Right EB: $\lim_{x \to \infty} f(x) = \infty$

Inc: $(1, \infty)$

Dec: $(-\infty, 1)$

21. $i(x) = -3|x+1| + 3$



Parent Function: $|x|$

Domain: $(-\infty, \infty)$

Range: $(-\infty, -3]$

x-int: $(-2, 0)$, $(0, 0)$

y-int: $(0, 0)$

Left EB: $\lim_{x \to -\infty} f(x) = -\infty$

Right EB: $\lim_{x \to \infty} f(x) = -\infty$

Inc: $(-\infty, -1)$

Dec: $(-1, \infty)$