Secondary Math III
Unit 2 Review

(when dividing a polynomial with a missing degree, don't forget the place holder)

Name Key
Period

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

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

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)*

1. $(8x^3-2x^2-4x+8)+(5x^2+6x-4)$

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

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

$5x(3x^2-7x+6x-14)$

$15x^3-5x^2-70x$

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

$-4x^2-2x+8-x^2-8x+5$

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

4. $(3x^3+12x^2+11x-2)\div(x+2)$

-2	3	12	11	-2
	↓	-6	-10	2
	3	6	-1	0

$3x^2+6x-1$

$(3x^3+12x^2+11x-2)=(x+2)(3x^2+6x-1)$

5. $(x+y)^6$

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

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

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

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

7. $(57x^{18}-x^2)-(6x-71x^3+5x^2+2)$

$57x^{18}-x^2+71x^3-5x^2-6x-2$

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

8. $(9x^4+x^3+11x^2-4)\div(x^2+16)$

$9x^2+x-133$

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

$-9x^4 \quad -144x^2$

x^3-133x^2-0x-4

$-x^3 \quad -16x$

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

$+133x^2 \quad +2128$

$-16x+2124$

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

$9x^4+x^3+11x^2-4=(x^2+16)(9x^2+x-133)-16x+2124$

9. $(16-x^2)+(-18x^2+7x^5-10x^4+5)$

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

10. $(5x+y)^4$

$\binom{4}{0}(5x)^4(y)^0+\binom{4}{1}(5x)^3(y)^1+\binom{4}{2}(5x)^2(y)^2+\binom{4}{3}(5x)^1(y)^3+\binom{4}{4}(5x)^0(y)^4$

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

Factor the polynomial. *(Lesson 6.4)*

11. $3x^2 + 4x - 4$

-12
$6 \quad -2$

$3x^2+6x-2x-4$

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

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

12. $2x^3 + 4x^2 - 30x$ $= 2x(x^2+2x-15)$

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

13. $9x^2 - 25$

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

14. $4x^2 - 16x + 16$

$4(x^2-4x+4)$

$4(x-2)(x-2) = 4(x-2)^2$

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

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

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

16. $8x^4 + 8x^3 + 27x + 27$

$8x^3(x+1)+27(x+1)$

$(x+1)(8x^3+27)$

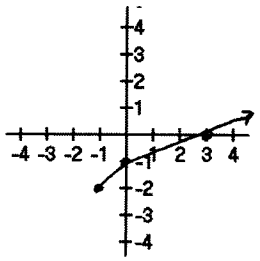
$a=2x$
$b=3$

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

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.

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



Parent Function: $P(x) = \sqrt{x}$

Domain: $[-1, \infty)$

Range: $[-2, \infty)$

x-int: $(3, 0)$

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

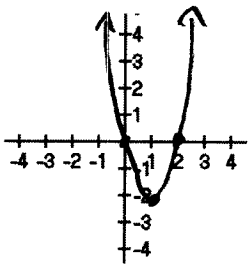
Left EB: $\emptyset$

Right EB: ∞

Inc: $(-1, \infty)$

Dec: $\emptyset$

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



Parent Function: $P(x) = x^2$

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

Range: $[-2, \infty)$

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

y-int: $(0, 0)$

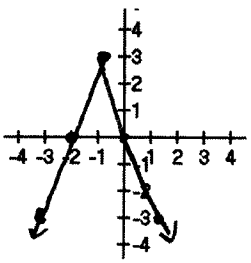
Left EB: ∞

Right EB: ∞

Inc: $(1, \infty)$

Dec: $(-\infty, 1)$

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



Parent Function: $P(x) = |x|$

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

Range: $(-\infty, 3]$

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

y-int: $(0, 0)$

Left EB: $-\infty$

Right EB: $-\infty$

Inc: $(-\infty, 1)$

Dec: $(1, \infty)$