Name Answer Key Pd _____ Date _____
Ms. Schmidt Intermediate Algebra

Review for Exam #1

Notes	Examples
Combining Like Terms -Match the variables and exponents -Add and subtract the coefficients **Exponents STAY the same!	1) $\frac{5}{2}x^2 + \frac{1}{4}x - \frac{1}{5}x^2 + \frac{3}{8}x - \frac{5}{2}$ $\frac{23}{10}x^2 + \frac{5}{8}x - \frac{5}{2}$
Distributing -Multiply the number outside of the ( ) or [ ] inside -Combine like terms AFTER distributing	2) $5[x - 3(2x - 4)]$ $5[x - 6x + 12]$ $5x - 30x + 60 \rightarrow -25x + 60$
Evaluating Expressions/Functions -Replace the variables with the numbers using ( ) -Type into calculator using ( )!!!	3) Evaluate $a^2 - abc + b$ when a = -1, b = 2, c = -3 $(-1)^2 - (-1)(2)(-3) + (2) = -3$ 4) If $f(x) = x^3 - 4x^2 + 1$ find $f(-2)$ $(-2)^3 - 4(-2)^2 + 1 = -23$
Adding Polynomials -Combing like terms!!! *descending order*	4) Find the sum of $-3x^3 + 4x^2 - 5x$ and $5x^2 - 6x^3 + 8x$ $-9x^3 + 9x^2 + 3x$
Subtracting Polynomials -Keep the first polynomial the same -Change to addition -Change ALL signs in the second polynomial **FROM means FIRST! *descending order*	5) Subtract $-3x^3 + 4x^2 - 5x$ from $5x^2 - 6x^3 + 8x$ $(5x^2 - 6x^3 + 8x) + (3x^3 - 4x^2 + 5x)$ $-3x^3 + x^2 + 13x$ 6) Subtract: $(6x^2 - 5x + 2) - (5x^2 - 4x - 6)$ $(6x^2 - 5x + 2) + (-5x^2 + 4x + 6)$ $x^2 - x + 8$
Multiplying Polynomials -Multiply the coefficients -Add the exponents *Double distribute or Box Method!!	7) $(2x - 5)(x + 5)$ $2x^2 + 10x - 5x - 25$ $2x^2 + 5x - 25$ 8) $(x^2 - 4)(x^3 - 5x + 12)$ $x^5 - 9x^3 + 12x^2 + 20x - 48$
Dividing Polynomials -Rewrite as separate fractions -Divide the Coefficients -Subtract the exponents	9) $\frac{24x^3y^3 - 16x^5y + 8x^2y^2}{8x^2y^2}$ $\frac{24x^3y^3}{8x^2y^2} - \frac{16x^5y}{8x^2y^2} + \frac{8x^2y^2}{8x^2y^2}$ $3xy - \frac{2x^3}{y} + 1$

Compositions -The right or inside function comes FIRST -Replace x with either the function or number (if given)	10) If $f(x) = 2x - 1$ and $g(x) = x^2$ find $(g \circ f)(-2)$ $f(-2) = 2(-2) - 1 = -5$ $g(-5) = (-5)^2 = 25$ 11) If $m(x) = x^2 - 3$ and $k(x) = 4x - 1$ find $m(k(x))$ $(4x-1)^2 - 3$ $4x^2 - 4x - 4x + 1 + 3$ $(4x-1)(4x-1) - 3$ $4x^2 - 8x + 4$

**Answer Key Available at www.ms-schmidt.weebly.com Under Notes- Unit 1 Polynomial Expressions

Part I: Simplify each

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

$5x^4 + 2x^3 - 20x^2 - 2x^3$

$5x^4 - 20x^2$

2) $6 - 4(x + 7)$

$6 - 4x - 28$

$-4x - 22$

3) $4a - 2[a - 9(2a + 5) + 2a]$

$4a - 2[a - 18a - 45 + 2a]$ → $4a + 30a + 90$

$4a - 2[-15a - 45]$ → $34a + 90$

4) $2y^2 + \frac{1}{3}y(9y - 3) + 8y$

$2y^2 + 3y^2 - y + 8y$

$5y^2 + 7y$

5) $-3x + \frac{2}{3}(6x - 18) + 5$

$-3x + 4x - 12 + 5$

$x - 7$

6) $3b - 2\{b^2 - [4b - 9(b + 2)] + 3b^2\}$

$3b - 2\{b^2 - [4b - 9b - 18] + 3b^2\}$

$3b - 2\{b^2 - [-5b - 18] + 3b^2\}$

$3b - 2\{b^2 + 5b + 18 + 3b^2\}$

$3b - 2\{5b + 18 + 4b^2\}$ → $3b - 10b - 36 - 8b^2$

$-8b^2 - 7b - 36$

Part II: Evaluate each

7) If $x = -6$, find the value of $2x^2 + \frac{5}{2}x - 1$.

$2(-6)^2 + \frac{5}{2}(-6) - 1$

$2(36) + -15 - 1$

$72 + -15 - 1 = 56$

8) Evaluate $-a^2 - (4a + 5) + 2$ when $a = 4$.

$-(4)^2 - (4(4) + 5) + 2$

$-16 - (16 + 5) + 2$

$-16 - 21 + 2 = -35$

9) If $x = -2$, *and* $y = 5$, find the value of $\frac{3x^2 - 2y}{-2xy + 7}$

$\frac{3(-2)^2 - 2(5)}{-2(-2)(5) + 7} = \frac{2}{27}$

10) Evaluate $6 - 2a - 2b^2$, when $a = 3$ *and* $b = 4$.

$6 - 2(3) - 2(4)^2$

$6 - 6 - 32 = -32$

11) Given $f(x) = 14x^2 - 25$, evaluate $f(-2)$

$14(-2)^2 - 25$

$14(4) - 25 = 31$

12) If $g(y) = 3y^2 - 10y + 5$, find $g(4)$

$3(4)^2 - 10(4) + 5 = 13$

$3(16) - 40 + 5$

Part III: Perform the indicated operation

13) From $3x^2 - 5x + 2$ subtract $4x^2 - 10$

$(3x^2 - 5x + 2) + (-4x^2 + 10)$

$-x^2 - 5x + 12$

14) Add $(10x^3 + 8x^2 + 1)$ and $(-7x^3 + 3x^2 - 2x - 1)$

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

15) Subtract $(-x^2 + 7x - 3)$ from $(2x^2 + 7x + 10)$

1st

$(2x^2 + 7x + 10) + (+1x^2 - 7x + 3)$

$3x^2 + 13$

16) Simplify: $(-3a^3 + 5a^2 + a - 13) + (4a^3 + 2a^2 - 6a + 2)$

$-7a^3 + 7a^2 - 5a - 11$

17) Multiply: $(-2x + 3)(6x + 1)$

$-12x^2 - 2x + 18x + 3$

$-12x^2 + 16x + 3$

18) Multiply: $(3x - 4)(2x^2 + 6x + 9)$

$6x^3 + 18x^2 + 27x - 8x^2 - 24x - 36$

$6x^3 + 10x^2 + 3x - 36$

	$2x^2$	$+6x$	$+9$
$3x$	$6x^3$	$18x^2$	$+27x$
-4	$-8x^2$	$-24x$	-36

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

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

$2 - 3x(x^2 + 5x + 5x + 25)$

$2 - 3x(x^2 + 10x + 25)$

$2 - 3x^3 - 30x^2 - 75x$

$-3x^3 - 30x^2 - 75x + 2$

20) Multiply: $(6x - 7y)^2$

$(6x - 7y)(6x - 7y)$

$36x^2 - 42xy - 42xy + 49y^2$

$36x^2 - 84xy + 49y^2$

21) Simplify: $2 - 5(3x + 2)(x - 4) + 10x$

$2 - 5(3x^2 - 4x + 2x + 8) + 10x$

$2 - 5(3x^2 - 2x + 8) + 10x$

$2 - 15x^2 + 10x - 40 + 10x$

$-15x^2 + 20x - 38$

22) Simplify: $\frac{36x^2y}{12xy^3}$

$\frac{3x}{y^2}$

23) Divide: $\frac{27x^3+9x^2-3x}{3x}$

$\frac{27x^3}{3x} + \frac{9x^2}{3x} - \frac{3x}{3x}$

$3x^2 + 3x - 1$

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24) Divide: $\frac{28a^4b^2-12a^3b+2a^2b^3}{4a^2b}$

$\frac{28a^4b^2}{4a^2b} - \frac{12a^3b}{4a^2b} + \frac{2a^2b^3}{4a^2b}$

$7a^2b - 3a + \frac{b^2}{2}$

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25) Divide: $\frac{100y^3+35yz-10z^2}{5yz}$

$\frac{100y^3}{5yz} + \frac{35yz}{5yz} - \frac{10z^2}{5yz}$

$\frac{20y^2}{z} + 7 - \frac{2z}{y}$

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26) Divide: $\frac{16x^2y+12xy^2}{4xy}$

$\frac{16x^2y}{4xy} + \frac{12xy^2}{4xy}$

$4x + 3y$

Part IV: Compositions

27) Given $f(x) = 3x - 2$ and $g(x) = x^2 - 3$ find $(g \circ f)(2)$ ← first

$f(2) = 3(2) - 2 = 4$

$g(4) = (4)^2 - 3 = 13$

28) If $f(x) = 2x - 1$ and $h(x) = x^2 + 1$, find $(h \circ f)(-4)$ ← first

$f(-4) = 2(-4) - 1 = -9$

$h(-9) = (-9)^2 + 1 = 82$

29) Given $f(x) = 2x - 1$ and $g(x) = 2x^2 - 3x$ find $g(f(x))$ ← first

$2(2x-1)^2 - 3(2x-1)$

$2(2x-1)(2x-1) - 3(2x-1)$

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

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

$8x^2 - 8x + 2 - 6x + 3$

$8x^2 - 14x + 5$

30) If $f(x) = x^2 - 1$ and $g(x) = 2x + 5$, find $f(g(x))$ ← first

$(2x+5)^2 - 1$

$(2x+5)(2x+5) - 1$

$4x^2 + 10x + 10x + 25 + 1$

$4x^2 + 20x + 26$