

Name: Key

Date: _____

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

What you need to know & be able to do	Things to remember	Problem	Problem
<p>Classify Polynomials</p>	<ul style="list-style-type: none"> Write all answers in Standard Form <ul style="list-style-type: none"> Highest Exp to Lowest Classify Polynomials based on Degree and # terms Leading Coeff - First coeff in standard form Constant - Term without a variable 	<p>1. List all the names for: Degree: 0 - <u>constant</u> 1 - <u>linear</u> 2 - <u>quadratic</u> 3 - <u>cubic</u> 4 - <u>quartic</u></p> <p>Number of terms: 1 - <u>monomial</u> 2 - <u>binomial</u> 3 - <u>trinomial</u> 4 - <u>polynomial</u></p>	<p>2. $f(x) = x + 2 - x^2 - 4x^4$ standard form: <u>$-4x^4 - x^2 + x + 2$</u> leading coefficient: <u>-4</u> constant: <u>2</u> name by degree: <u>quartic</u> name by # terms: <u>polynomial</u></p>
<p>Adding and Subtracting</p>	<p><u>Adding:</u></p> <ul style="list-style-type: none"> Combine like terms <p><u>Subtracting:</u></p> <ul style="list-style-type: none"> Distribute the negative Combine like terms 	<p>3. $(3x^2 + 7 + x) + (14x^3 + 2 + x^2 - x)$ $14x^3 + 4x^2 + 9$</p>	<p>4. $(1 - x^2) - (3x^2 + 2x - 5)$ $1 - x^2 - 3x^2 - 2x + 5$ $-4x^2 - 2x + 6$</p>
<p>Multiply Polynomials</p>	<ul style="list-style-type: none"> Distribute every term Multiply numbers, add exponents 	<p>5. $(3x^2)(2x^2 + 9x - 6)$ $6x^4 + 27x^3 - 18x^2$</p>	<p>6. $(x - y)(x^2 - xy + y^2)$ $x^3 - x^2y + xy^2 - x^2y + xy^2 - y^3$ $x^3 - 2x^2y + 2xy^2 - y^3$</p>
<p>Combing Functions</p>	<p>Given: $f(x) = 2x^2 + 5x - 3$ $g(x) = -4x^2 + 5$</p>	<p>7. Find $f(x) - g(x)$ $2x^2 + 5x - 3 + 4x^2 - 5$ $6x^2 + 5x - 8$</p>	<p>8. Find $g(x) \cdot f(x)$ $(-4x^2 + 5)(2x^2 + 5x - 3)$ $-8x^4 - 20x^3 + 12x^2 + 10x^2 + 25x - 15$ $-8x^4 - 20x^3 + 22x^2 + 25x - 15$</p>
<p>Binomial Expansion</p>	<ul style="list-style-type: none"> KNOW Pascal's Triangle!! <pre> 1 1 1 1 2 1 1 3 3 1 1 4 6 4 1 </pre>	<p>9. $(y - 3)^4$ $1y^4 - 4y^3(-3) + 6y^2(-3)^2 - 4y(-3)^3 + 1(-3)^4$ $y^4 - 12y^3 + 54y^2 - 108y + 81$</p>	<p>10. $(4z + 5)^3$ $1(4z)^3 + 3(4z)^2(5) + 3(4z)(5)^2 + 1(5)^3$ $4^3z^3 + 3(4^2z^2)5 + 3(4z)(25) + 125$ $64z^3 + 240z^2 + 300z + 125$</p>

<p>Dividing Polynomials</p>	<p>Missing terms need "0"</p> <p><u>Synthetic Division</u></p> <ul style="list-style-type: none"> Find value of divisor Use coefficients Multiply and Add Answer - go down 1 degree <p><u>Long Division</u></p> <ul style="list-style-type: none"> What makes ___? Multiply Subtract Bring Down 	<p>11. $(x^4 - 3x^3 - 7x - 14) \div (x - 4)$</p> $\begin{array}{r} 4 \overline{) 1 \ -3 \ 0 \ -7 \ -14} \\ \underline{4 \ 4 \ 16 \ 36} \\ 1 \ 1 \ 4 \ 9 \ 22 \\ \underline{1 \ 1 \ 4 \ 9 \ 22} \\ 0 \end{array}$ $\frac{x^3 + x^2 + 4x + 9 + \frac{22}{x-4}}$ <p>12. $(4x^2 + 5x + 1) \div (x + 1)$</p> $\begin{array}{r} 1 \overline{) 4 \ 5 \ 1} \\ \underline{4 \ 4} \\ 1 \ 1 \ 1 \\ \underline{1 \ 1} \\ 0 \end{array}$ <p>$4x + 1$</p>	<p>13. $(8x^4 + 2x^2 - 12x + 9) \div (x^2 + x - 3)$</p> $\begin{array}{r} 8x^2 - 8x + 34 \\ \hline x^2 + x - 3 \overline{) 8x^4 + 0x^3 + 2x^2 - 12x + 9} \\ \underline{\ominus 8x^4 + 8x^3 - 24x^2} \\ 8x^3 + 26x^2 - 12x \\ \underline{\ominus 8x^3 + 8x^2 + 24x} \\ 34x^2 - 36x + 9 \\ \underline{\ominus 34x^2 + 34x - 102} \\ -70x + 111 \end{array}$ <p>$8x^2 - 8x + 34 + \frac{-70x + 111}{x^2 + x - 3}$</p>
<p>Factoring</p>	<ul style="list-style-type: none"> GCF Factoring <p><u>Factoring Trinomial</u></p> <ul style="list-style-type: none"> Factor <p><u>Factoring Binomials</u></p> <ul style="list-style-type: none"> DOTS $(a+b)(a-b)$ Sum and Diff of Cubes $(a+b)(a^2 - ab + b^2)$ <p><u>Grouping - 4 Terms</u></p> <ul style="list-style-type: none"> Group each Find GCF's $(GCF)(Leftovers)$ <p><u>Higher Powers</u></p> <ul style="list-style-type: none"> $(x^2)(x^2)$ 	<p>14. $4x^5 + 20x^3 - 12x^2$</p> $4x^2(x^3 + 5x - 3)$ <p>16. $3x^2 + x - 4$</p> $(3x + 4)(x - 1)$ <p>18. $2x^3 - 50x$</p> $2x(x^2 - 25)$ $2x(x + 5)(x - 5)$ <p>20. $(2x^3 + x^2) + (8x + 4)$</p> $x^2(2x + 1) + 4(2x + 1)$ $(x^2 + 4)(2x + 1)$ <p>22. $x^4 - 14x^2 + 49$</p> $(x^2 - 7)(x^2 - 7)$	<p>15. $-3x^4y^2 + x^2y^2 + 15x^3y$</p> $-x^2y(3x^2y - 5x - y)$ <p>17. $6x^2 + 15x - 36$</p> $3(2x^2 + 5x - 12)$ $3(2x - 3)(x + 4)$ <p>19. $27x^3 + 64$</p> $(3x + 4)(9x^2 - 12x + 16)$ <p>21. $(8y^3 - 4y^2)(-50y + 25)$</p> $4y^2(2y - 1) - 25(2y - 1)$ $(4y^2 - 25)(2y - 1)$ $(2y + 5)(2y - 5)(2y - 1)$ <p>23. $x^4 - 1$</p> $(x^2 + 1)(x^2 - 1)$ $(x^2 + 1)(x + 1)(x - 1)$
<p>Solve by Factoring</p>	<ul style="list-style-type: none"> Set = 0 Factor Set each () = 0 Solve for x 	<p>24. $4x^3 + 4x^2 + x = 0$</p> $x(4x^2 + 4x + 1) = 0$ $x(2x + 1)(2x + 1) = 0$ <p>$x = 0$ $2x + 1 = 0$ $2x + 1 = 0$</p> <p>$2x = -1$ $x = -1/2$ $x = -1/2$</p>	<p>25. $x^4 = -5x^3$</p> $x^4 + 5x^3 = 0$ $x^3(x + 5) = 0$ <p>$x = 0$ $x = 0$ $x + 5 = 0$</p> <p>$x = 0$ $x = 0$ $x = -5$</p>