

#4 HW Polynomials & Factoring

Name _____/_____/15

Identify the DEGREE of monomial. Rewrite in STANDARD FORM (SF), identify the leading coefficient, degree and each number of terms. Name the polynomial.

1. $4x^3y^2$ 5	3. $3x^3 + 2x^4 - 7x + x^2$ SF: $2x^4 + 3x^3 + x^2 - 7x$ LC: <u>2</u> Degree: <u>4</u> # Terms: <u>4</u> Name: <u>Quartic Polynomial</u>	4. $6x - 4x^4 + 5^7$ SF: $-4x^4 + 6x + 78125$ LC: <u>-4</u> Degree: <u>4</u> # Terms: <u>3</u> Name: <u>Quartic trinomial</u>
2. $-17x^4y^2z$ 7		

Add or Subtract. Write answers in STANDARD FORM.

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

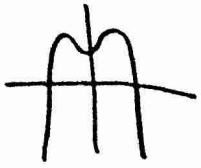
7. $x^2y(5x^2 + 8x - 7)$ $5x^4y + 8x^3y - 7x^2y$	8. $2r^2(6x^3 + 14r^2 - 30r + 14)$ $12r^2x^3 + 28r^4 - 60r^3 + 28r^2$	9. $(x - y)(x^2 + 2xy - y^2)$ $x^3 + 2x^2y - xy^2 - x^2y - 2xy^2 + y^3$ $x^3 + x^2y - 3xy^2 + y^3$
10. $(3x - 2)(2x^2 + 3x - 1)$ $6x^3 + 9x^2 - 3x - 4x^2 - 6x + 2$ $6x^3 + 5x^2 - 9x + 2$	11. $(2x - 3)^3$ $(2x - 3)(2x - 3)(2x - 3)$ $4x^2 - 6x - 6x + 9$ $(4x^2 - 12x + 9)(2x - 3)$ $8x^3 - 24x^2 + 18x - 12x^2 + 36x - 27$ $8x^3 - 36x^2 + 54x - 27$	

Solve Each

12. The distance d , in centimeters, that a diving board bends below its resting position when you stand at its end is dependent on your distance x , in meters, from the stabilized point. This is modeled by the function $d(x) = -4x^3 + x^2$. $-x^2(4x - 1) = 0$ $x = 0 \quad x = \frac{1}{4}$	A) Evaluate $d(x)$ for $x = 1$ and $x = 2$ $-4(1)^3 + (1)^2 = -3$ $-4(2)^3 + (2)^2 = -28$ B) Describe what the values of the function from part A represent.
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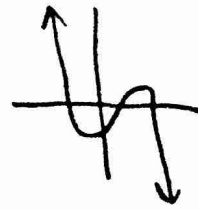
Graph each polynomial function on a calculator. Sketch the graph, then describe the graph and identify the number of real zeros.

13. $f(x) = -2x^4 + 5x^2 + 4$



inc, dec, inc, dec
2 real roots

14. $g(x) = -5x^5 + 4x - 1$



dec, inc, dec
3 real roots

Factor Each expression completely.

15. $(2x^3 + 10x^2)(x + 5)$

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

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

16. $4x^3 - 8x^2 + 3x - 6$

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

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

17. $(8x^3 - 4x^2) - 50x + 25$

$4x^2(2x - 1) - 25(2x - 1)$

$(4x^2 - 25)(2x - 1)$

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

18. $(4x^3 + 3x^2) - 16x - 12$

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

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

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

19. $x^3 + 125$

$(x)^3 (5)^3$

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

20. $8x^3 - 27$

$(2x)^3 (3)$

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