

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1.  $f(x) = 3x + 5$   $g(x) = x - 3$

a.  $f(x) + g(x)$   
 $(3x + 5) + (x - 3)$   
 $4x + 2$

b.  $g(x) - f(x)$   
 $(x - 3) - (3x + 5)$   
 $x - 3 - 3x - 5$   
 $-2x - 8$

c.  $f(g(-2))$   
 $g(-2) = (-2) - 3 = -5$   
 $f(-5) = 3(-5) + 5$   
 $= -10$

2.  $f(x) = x^2$   $g(x) = x - 1$

a.  $f(x) \cdot g(x)$   
 $(x^2)(x - 1)$   
 $x^3 - x^2$

b.  $g(f(-3))$   
 $f(-3) = (-3)^2 = 9$   
 $g(9) = (9) - 1$   
 $= 8$

3.  $f(x) = 3x^3 - 2x$   $g(x) = 2x^2 + 4$

a.  $2f(x) + 3g(x)$   
 $2(3x^3 - 2x) + 3(2x^2 + 4)$   
 $6x^3 - 4x + 6x^2 + 12$   
 $6x^3 + 6x^2 - 4x + 12$

b.  $3g(x) - 4f(x)$   
 $3(2x^2 + 4) - 4(3x^3 - 2x)$   
 $6x^2 + 12 - 12x^3 + 8x$   
 $-12x^3 + 6x^2 + 8x + 12$

4.  $f(x) = 2x^3 - 3x^2 + 1$   $g(x) = 2x$

a.  $g(x) \cdot f(x)$   
 $(2x)(2x^3 - 3x^2 + 1)$   
 $4x^4 - 6x^3 + 2x$

b.  $5g(x) - 3f(x)$   
 $5(2x) - 3(2x^3 - 3x^2 + 1)$   
 $10x - 6x^3 + 9x^2 - 3$   
 $-6x^3 + 9x^2 + 10x - 3$

5.  $f(x) = 3x$   $g(x) = x + 2$

a.  $f(x) \cdot g(x)$   
 $(3x)(x + 2)$   
 $3x^2 + 6x$

b.  $g(g(x))$   
 $(g(x)) + 2$   
 $(x + 2) + 2$   
 $x + 4$

Analyze the following polynomials:

1.  $f(x) = 5x^2 + 7 - 3x - 9x^3$

standard form:  $-9x^3 + 5x^2 - 3x + 7$

degree:  $3^{rd}$

leading coefficient:  $-9$

constant:  $7$

Classify (2 names): *Cubic Polynomial*

2.  $g(x) = 7x^2 - 8x^3$

standard form:  $-8x^3 + 7x^2$

degree:  $3^{rd}$

leading coefficient:  $-8$

constant:  $0$  or None

Classify (2 names): *Cubic Binomial*

3.  $h(x) = 4x^2$

standard form:  $4x^2$

degree:  $2^{nd}$

leading coefficient:  $4$

constant:  $0$  or None

Classify (2 names): *Quadratic Monomial*

4.  $m(x) = 9x^2 + 6 - 2.3x$

standard form:  $9x^2 - 2.3x + 6$

degree:  $2^{nd}$

leading coefficient:  $9$

constant:  $6$

Classify (2 names): *Quadratic Trinomial*

5.  $z(x) = 2x^2 - 4 - 3x^4 + 12x^3$

standard form:  $-3x^4 + 12x^3 + 2x^2 - 4$

degree:  $4^{th}$

leading coefficient:  $-3$

constant:  $-4$

Classify (2 names): *Quartic Polynomial*