

| DEGREE | NAME | EXAMPLE |
|--------|-----------|-------------|
| 0 | Constant | 3 |
| 1 | Linear | $x+1$ |
| 2 | Quadratic | ax^2+bx+c |
| 3 | Cubic | x^3-2x+7 |

Polynomial is named by 1st exponent
- # of terms

| | | |
|---------|-----------|---------------|
| 5 | $x-2$ | x^2-2x+4 |
| x | $3x^2+1$ | $3x^3-5x^2+x$ |
| $5x$ | $5x^3-5x$ | $6x^7+x-1$ |
| $-3x^2$ | | |

monomials Binomial Trinomial

Nov 9-12:47 PM

x^1 Linear monomial
 x^1+3 Linear Binomial
 x^2 Quadratic monomial
 x^2-4x-2 Quadratic Trinomial
 $4x^3-2$ Cubic Binomial

Nov 9-1:18 PM

① $(x+3y)+(-3x-y)-(x-y)$

$$x+3y-3x-y-(x-y)$$

$$-2x+2y-(x-y)$$

$$-2x+2y-x+y$$

$$-3x+3y$$

Nov 9-1:21 PM

$(7y+4x+9)-(6x-8y+11)$

$$7y+4x+9-6x+8y-11$$

$$15y-2x-2$$

Nov 9-1:24 PM

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

~~$$2x^2+3y^2-z^2-x^2+y^2+z^2+4x^2-3y^2$$~~

$$5x^2+y^2$$

Nov 9-1:27 PM

⑤ $(4a^2-5ab-6b^2)+(10ab-6a^2-8b^2)$

~~$$4a^2-5ab-6b^2+10ab-6a^2-8b^2$$~~

$$-2a^2+5ab-14b^2$$

Nov 9-1:31 PM

P64

$$f(x) = 2x^2 + 3x - 5$$

$$g(x) = 5x^2 + 4x - 1$$

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

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

$$\boxed{3x^2 + x + 4}$$

Vertically solved

$$\begin{array}{r} 5x^2 + 4x - 1 \\ - 2x^2 + 3x - 5 \\ \hline 3x^2 + x + 4 \end{array}$$

Nov 9-1:35 PM

Exponents

When we multiply powers, we multiply Coefficient and ADD exponents.

Example

$$5x^2 \cdot 4x^6 = 20x^8$$

Nov 9-1:41 PM

$$x \cdot x = x^2 \quad x^0 = 1$$

$$-6x^3 \cdot 2x^{-1} = -12x^2 \quad (5x4z)^0 = 1$$

$$5x(x-2) = 5x^2 - 10x$$

$$3x^2(2x^3 - 3x) = 6x^5 - 9x^3$$

FOIL

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

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

$$\boxed{2x^2 + x - 3}$$

Nov 9-1:44 PM

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

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

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

$$\boxed{2x^2 + x - 3}$$

Nov 9-1:50 PM

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

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

$$\boxed{2x^4 - 2x^3 - 2x^2 + 6x - 4}$$

Nov 9-1:51 PM

P64

$$f(x) \cdot g(x)$$

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

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

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

$$\boxed{6x^3 + 17x^2 + 16x + 6}$$

Nov 9-1:54 PM

pls

$$m(y) = 3y^5 - 2y^2 + 8$$

$$p(y) = y^2 - 2$$

$$m(y) \cdot p(y)$$

$$(y^2 - 2)(3y^5 - 2y^2 + 8)$$

$$3y^7 - 2y^4 + 8y^2 - 6y^5 + 4y^2 - 16$$

$$\boxed{3y^7 - 6y^5 - 2y^4 + 12y^2 - 16}$$

Nov 9-1:58 PM

$$h(x) = x - 1$$

$$g(x) = x^3 + 6x^2 - 5$$

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

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

$$\boxed{x^4 + 5x^3 - 6x^2 - 5x + 5}$$

Nov 9-2:01 PM

$$(6x+5)(6x+5) - (x+2)(x+4)$$

$$6x^2 + 30x + 25 - (x^2 + 6x + 8)$$

$$36x^2 + 60x + 25 - x^2 - 6x - 8$$

$$\boxed{35x^2 + 54x + 17}$$

Nov 9-2:05 PM

$$s(x) = s - 6$$

$$w(x) = s + 8$$

$$A(x) = \frac{s(x) \cdot w(x)}{(s-6)(s+8)}$$

$$\boxed{s^2 + 2s - 48}$$

$$s^2 + 8s - 6s - 48$$

$$L(x) = 4x^4 - 3x^2 + 6$$

$$W(x) = x + 1$$

Select All that apply

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

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

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

Nov 9-2:12 PM

$$(x-8)(x-4)$$

$$x^2 - 4x - 8x + 32$$

$$\boxed{x^2 - 12x + 32}$$

$$(y-4)(y+5)$$

$$y^2 + 5y - 4y - 20$$

$$\boxed{y^2 + y - 20}$$

$$(x-9)(x-2)$$

$$x^2 - 11x + 18$$

Nov 9-2:21 PM

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

$$2x^2 + 6x + 4x + 12$$

$$\boxed{2x^2 + 10x + 12}$$

Nov 9-2:24 PM

8

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

$$6x^2 + 15x + 4x + 10$$

$$\boxed{6x^2 + 19x + 10}$$

Nov 9-2:25 PM

9

$$(4x-9)(3x+1)$$

$$12x^2 + 4x - 27x - 9$$

$$\boxed{12x^2 - 23x - 9}$$

Nov 9-2:26 PM

10

~~8x~~

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

$$8x^2 - 6x + 20x - 15$$

$$8x^2 + 14x - 15$$

Nov 9-2:27 PM

Nov 9-1:12 PM

Nov 9-1:14 PM

Nov 9-1:15 PM

Polynomials

| | | |
|-----------------|-----------------|------------------|
| <u>monomial</u> | <u>Binomial</u> | <u>Trinomial</u> |
| x | $x+5$ | $5x^2+x-2$ |
| 5 | $2x^2-3$ | $3x^3-5x^2+6x$ |
| $5x$ | $5x^3+6x$ | |
| One Term | 2 Terms | 3 Terms |

Nov 9-7:46 AM

$x + 2$

Nov 9-7:59 AM

9 $(a+2b) + (3b-4c) + (5a-7c) + 3b$

$a + 2b + 3b - 4c + 5a - 7c + 3b$

$6a + 8b - 11c$

Nov 9-7:59 AM

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

Standard form
Largest exponent 1st
Descending order
 $x^3 + x^2 + x$

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

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

$4x^3 - 6x^2 + 3x - 1$
 $8x^3 + 4x^2 - 2x + 3$

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

Nov 9-8:03 AM

14 $(2y + 3x - 4) + (9 - 8y - 5x) + (3x + 4y - 2)$

$2y + 3x - 4 + 9 - 8y - 5x + 3x + 4y - 2$

$-2y + x + 3$

Nov 9-8:12 AM

16 $7y + 4x + 9$
 $-8y + 6x + 11$

$15y - 2x - 2$

$(7y + 4x + 9) - (8y - 6x + 11)$
 $7y + 4x + 9 - 8y + 6x - 11$

$15y - 2x - 2$

Nov 9-8:16 AM

$$\begin{aligned} & 5(x+3) \\ & \boxed{5x + 15} \\ & \begin{array}{c} + \\ X \cdot X \\ X \cdot X = X^2 \\ X + X = 2X \end{array} \end{aligned}$$

Nov 9-8:20 AM

Exponential Rules

$$X^3 \cdot X^2 = X^5$$

$$\begin{array}{c} \text{ADD} \\ 5^3 \cdot 4^2 = 20^5 \\ \text{Multiply} \end{array}$$

$$\begin{array}{c} 5x^2(x-2) \\ \boxed{5x^3 - 10x^2} \end{array}$$

$$5x^3 \cdot 1x^1$$

$$7x^2(3x^2 - 4x^2)$$

$$21x^4 - 28x^9$$

$$-28x^9 + 21x^4$$

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

$$\boxed{6x^6 - 18x^5}$$

Nov 9-8:21 AM

$$\begin{aligned} & (x-2)(x+8) \quad \text{FOIL} \\ & x^2 + 8x - 2x - 16 \\ & \boxed{x^2 + 6x - 16} \\ & x(x+8) - 2(x+8) \end{aligned}$$

Nov 9-8:29 AM

$$\begin{aligned} & (2x-3)(x+4) \\ & 2x^2 + 8x - 3x - 12 \\ & \boxed{2x^2 + 5x - 12} \end{aligned}$$

Nov 9-8:32 AM

p 64
Section 3
Topic 4

$$f(x) = 3x^2 + 4x + 2 \quad \text{Quadratic Trinomial}$$

$$g(x) = 2x + 3 \quad \text{Linear Binomial}$$

Find $f(x) \cdot g(x)$

$$\begin{aligned} & (2x+3)(3x^2+4x+2) \\ & 6x^3 + 8x^2 + 4x + 9x^2 + 12x + 6 \\ & \boxed{6x^3 + 17x^2 + 16x + 6} \end{aligned}$$

Nov 9-8:38 AM

$$\begin{aligned} & (y^2-2)(3y^5-2y^2+8) \\ & \cancel{3y^7} - 2y^4 + 8y^2 - \cancel{6y^5} + 4y^2 - 16 \\ & \boxed{3y^7 - 6y^5 - 2y^4 + 12y^2 - 16} \end{aligned}$$

Nov 9-8:46 AM

P66 #2

Area = length \times width
Base \times height

Envelope area
 $(6x+5)(6x+5)$
 $36x^2 + 60x + 25$

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

$f(\text{envelope}) - f(\text{label})$

$$\frac{36x^2 + 60x + 25}{x^2 + 6x + 8}$$

$$35x^2 + 54x + 17$$

Nov 9-8:52 AM

P67

Area of Rectangle
 $f(L) \cdot f(w)$
 $(s-6)(s+8)$
 $s^2 + 2s - 48$

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P67 #2

Area = $L(x) \cdot W(x)$
 $(x+1)(4x^4 - 3x^2 + 6)$
 $4x^5 - 3x^3 + 6x + 4x^4 - 3x^2 + 6$

Nov 9-9:03 AM