

11/13/2023:

Popular functions:

Polynomials

• constants

• 2 } don't care
• π } about input

• lines $\Rightarrow \underline{ax^1} + b$

$a > 0$

$a < 0$

• quadratic $\underline{ax^{(2)}} + bx + c$

$a > 0$ $a < 0$

• cubics $\underline{ax^{(3)}} + bx^2 + cx + d$

• quartics $\underline{ax^{(4)}} + bx^3 + cx^2 + dx + e$

$a > 0$ $a < 0$

• quintic $\underline{ax^{(5)}} + bx^4 + cx^3 + dx^2 + ex + f$

$a > 0$ $a < 0$

• hexic \leftarrow degree 6

• degrees

leading coeff

the highest
out on

the # in front
degree-defining

exponent or deg x
 x 's

$$2x^{15} - 7^{20} + 3x^2 - 14x^{19}$$

doesn't
count (no x)

deg = 19 leading coefficient = -14

	degree	leading coeff
$2x^2 - 15x^3 + 4$	3	-15
$-\pi x^{15} + x^3 + 20$	15	$-\pi$
$3x^2 - 17x^{2000} + 10$	2000	-17
$\frac{1}{2}x^3 - \frac{3}{7}x^4 + \frac{10}{19}x^{13}$	13	$\frac{10}{19}$

if degree is even

end points go same direction

lead
coef > 0

lead
coef < 0

$$f(x) = 7x^{20} - 4x^{2024}$$

if degree is odd

end points go opposite direction

lead
coef > 0

lead
coef < 0

$$f(x) = 2 + 3x - 10x^5$$

$$g(x) = 2x - 15x^2 + 4x^3$$

$a + b \Rightarrow$ add a to b

$a - b \Rightarrow$ subtract b from a

$$\underbrace{2}_{z} - 3i - \underbrace{(4 - 5i)}_w$$

$$\Rightarrow 2 - 3i - 4 + 5i$$

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

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

$$f(x) - g(x)$$

$$\Rightarrow 2 + x - x^2 - 3x^3$$

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

$$1 + 2x + 0x^2 - 7x^3$$