1 is highest exponent.

Linear

Looks like: $y = mx + b$ or $y = \#$

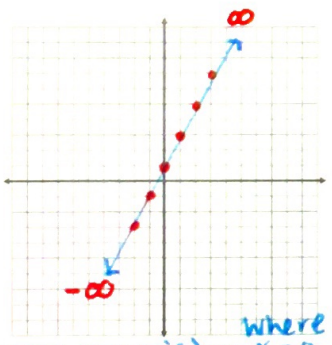
Equation: $y = 2x + 1$

Table:

x	0	1	2	3
y	1	3	5	7

+2 +2 +2 → common 1st difference

Graph:



Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

End Behavior:
$x \to \infty \; y \to \infty$
$x \to -\infty \; y \to -\infty$

Y – int: $(0,1)$ (where it crosses y-axis) or where $x = 0$ on table

x- Int: $(-\frac{1}{2}, 0)$ (where it crosses x-axis or where equation equals 0)

$0 = 2x + 1$
$-1 = 2x$
$-\frac{1}{2} = x$

Rate of Change from [0,4]:

$(0,1)$ $f(4) = 2(4) + 1$
$(4,9)$ $f(4) = 9$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9-1}{4-0} = \frac{8}{4} = 2$

•ALWAYS SLOPE FOR Linear fcns.

2 is highest exponent

Quadratic

Looks Like: $f(x) = ax^2 + bx + c$ or $f(x) = a(x-h)^2 + k$

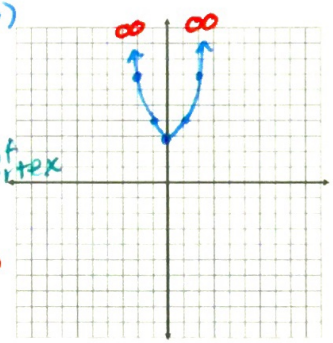
Equation: $y = x^2 + 3$

Table:

x	-2	-1	0	1	2
y	7	4	3	4	7

+3 -1 +1 +3 → common 2nd diff
+2 +2 +2

Graph:



Domain: $(-\infty, \infty)$

Range: $[3, \infty)$ → y-value of vertex

End Behavior:
$x \to \infty \; y \to \infty$
$x \to -\infty \; y \to \infty$

y-int: $(0,3)$

X-Int: None (for this one) where it crosses x-axis

Max/Min: min @ $(0,3)$

Rate of Change from [0,4]

$(0,3)$
$(4,19)$

$f(4) = 4^2 + 3$
$= 16 + 3$
$f(4) = 19$

$m = \frac{19-3}{4-0}$

$m = \frac{16}{4}$

$m = 4$

Changes based on interval

Exponential

Looks like: $y = ab^x$ or $y = a(b)^{x-n} + k$

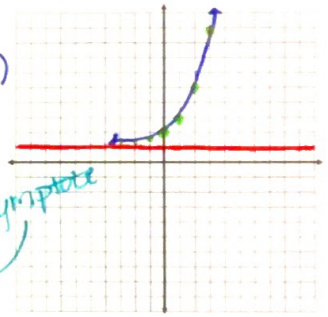
Equation: $y = 2^x + 1$

Table:

x	0	1	2	3	4	5
y	2	3	5	9	17	33

+1 +2 +4 +8 +16 → multiples!

Graph:



Domain: $(-\infty, \infty)$

Range: $(1, \infty)$

End Behavior:
$x \to \infty \; y \to \infty$
$x \to -\infty \; y \to 1$

y-int: $(0,2)$

x-Int: NONE (asymptote is above y-axis)

Horizontal Asymptote: $y = 1$

Rate of Change from [0,4]

$f(0) = 2^0 + 1$
$= 1 + 1$
$f(0) = 2$
$(0,2)$

$f(4) = 2^4 + 1$
$= 16 + 1$
$f(4) = 17$
$(4,17)$

$\frac{17-2}{4-0} = \frac{15}{4} = 3.75$

increases at increasing rate