Graphical Models : Anchor Charts

Definition (Algebraic)

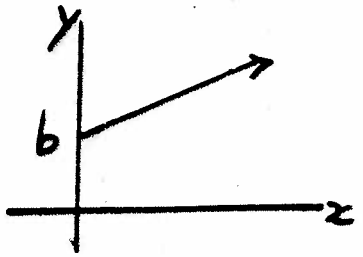
$y = mx + b$

m = slope (rate of change)

b = y-intercept (initial value)

(b can equal 0)

Visual Representation (Graph)



Constant rate of change

LINEAR

Numerical

Time (s)	Distance (m)	
0	0	+2
1	2	+2
2	4	+2
3	6	+2
4	8	+2

First Differences are constant

Real Life Example

Car on cruise control (constant speed)

hourly pay $P = 10.25t$

convert temperatures

$°F = 1.8C° + 32$

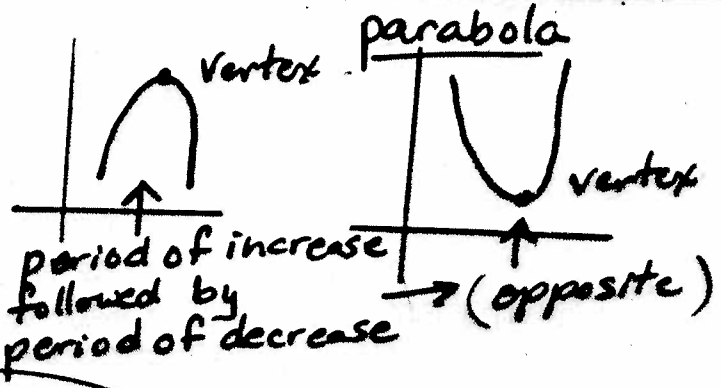
Graphical Models : Anchor Charts

Definition (Algebraic)

$y = ax^2 + bx + c$ ← standard form

or $y = a(x-h)^2 + k$ ← vertex form

Visual Representation (Graph)



Quadratic

Numerical $y = x^2$

x	y	First Differences	Second Differences
0	0	1	+2
1	1	3	+2
2	4	5	+2
3	9	7	↑ constant
4	16		

∴ Quadratic Relation

Real Life Example

- roller coaster (height vs. distance)
- ball thrown, hit or kicked into the air (height vs. time)
- pendulum.

Review

Graphical Models : Anchor Charts

EXPONENTIAL

Definition (Algebraic)

$y = ab^x$

a - initial value

b - multiplying factor or decay factor.

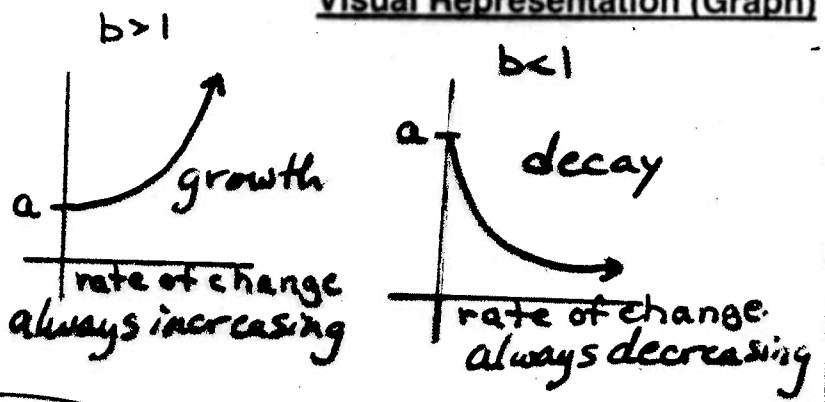
for compound interest

$A = P(1+i)^n$, A is the amount

P is the principal, n is the number of years

i is the interest as a decimal number.

Visual Representation (Graph)



Numerical

x	y	y starts at #7 0
0	100	> 200 ÷ 100 = 2
1	200	> x 2
2	400	> x 2
3	800	> x 2
4	1600	

Ratio

$y = ab^x$

← $y = 100(2)^x$

* Constant ratio (or multiplying factor) means exponential relation

Real Life Example

→ value of a car

→ compound interest

→ population growth

→ nuclear substances ($\frac{1}{2}$ life)

→ caffeine reduction

→ bacteria (doubling time).

→ temperature of hot water