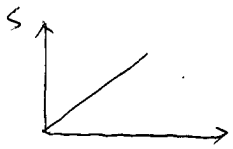
Lecture 1 (Sept. 04, 2013)

Important Information: Marking Scheme (Webwork 15%, OSH 5%, Midterms 30%, Final 50%)
Register Piazza.
No lab / office hour / Learning Centre this week.

Learning Goal: ① Properties of functions (general)
② Familiar with the properties of power functions (not finish)

Functions: $y = f(x)$. x - independent variable, y - dependent variable
Notice: for every value of x, a function f can at most assign one value to y
Example: ① The distance (s) a man moves through with a constant rate (v)
t - time
or $s = v \cdot t$



② a spherical cell.. the absorbtion rate (A) of nutrients is proportional to the surface area (S). The consuming rate (C) is " " the volume (V)

$A = k_1 \cdot S$, k_1 - constant with $S = 4\pi r^2$
$C = k_2 \cdot V$ k_2 - constant " $V = \frac{4}{3}\pi r^3$
$\Rightarrow A = k_1 \cdot 4\pi r^2$
$C = k_2 \cdot \frac{4}{3}\pi r^3$

1 Linear functions: $y = ax + b$

2. Power functions: $y = kx^n$, n - positive integer, k - constant
① Domain and range: domain $x \in (-\infty, +\infty)$
range y depends on n even/odd, the sign of k