Linear functions

A linear function is any function whose graph is a straight line (has constant slope)

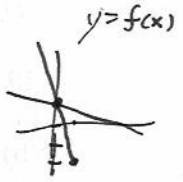
$$f(x) = mx + b.$$

m = slope $= \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x}$

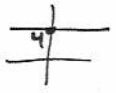
b = y-intercept

Ex:

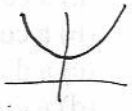
$f(x) = 1 - \frac{x}{2}$ — f is linear with slope $-\frac{1}{2}$ and y-intercept 1.



$y = 4$ — y is a linear function of x with slope 0 any y-intercept 4



$y = x \cdot x + 1$ — y is not linear in x



$6t - 4 = 2s + 3$ — t is linear in s with slope $\frac{1}{3}$ and y-int. $\frac{7}{6}$

s is linear in t with slope 3 and y-int $-\frac{7}{2}$

point slope form:

~~A linear~~ The line through (x_1, y_1) with slope m has the form

$$y = m(x - x_1) + y_1$$

Exponential Functions:

P is an exponential function of x with base b if

$$P = P_0 b^x$$

where P_0 is any real ~~cons~~ number. and b is a positive number $\neq 1$.