Linear functions

$$f(x) = mx + n \tag{1}$$

- m : slope. $m > 0$ "increasing" line. $m < 0$ "decreasing" line

- n : intercept. (Cut with the vertical axes)

Quadratic functions

$$f(x) = ax^2 + bx + c \tag{2}$$

Are parabolas

- $a > 0$ opens up

- $a < 0$ opens down
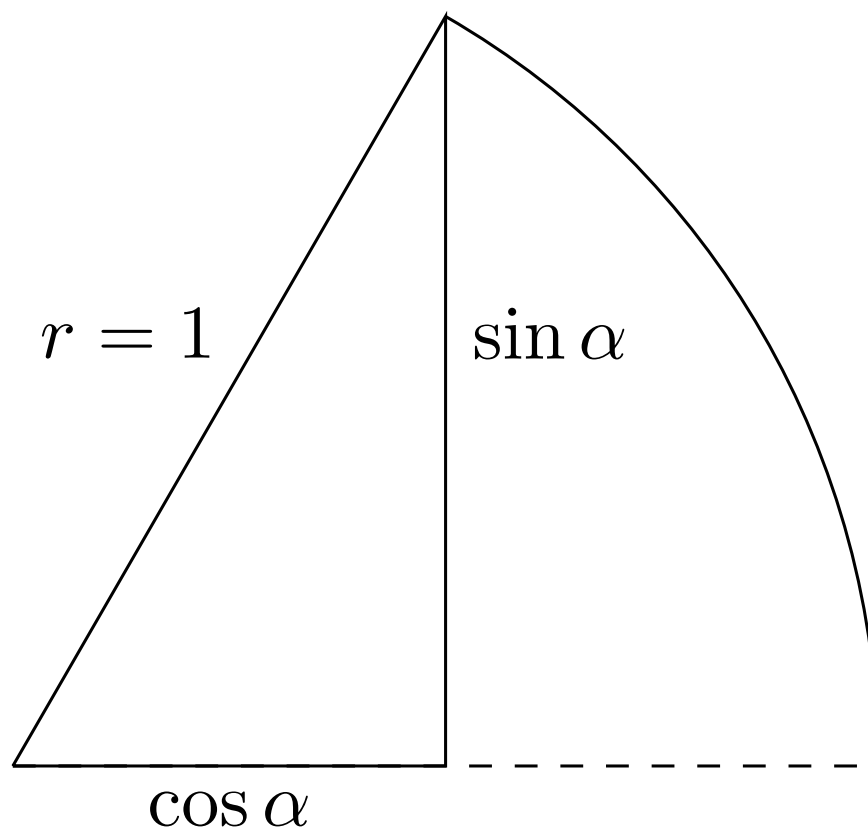
- Minima at $\frac{-b}{2a}$.

Polynomials

$$f(x) = a_0 + a_1 x + a_2 x^2 + \cdots + a_n x^n \tag{3}$$

- n : degree of polynomial

- Always go to $\pm\infty$ as $x \to \infty$ or $x \to -\infty$. Depending on the sign of a_n and if the degree is even/odd.

Trigonometric

- Useful to describe periodic phenomena. Different from polynomials, that eventually go to $\pm\infty$

- Angles measured in radians:

$$\text{angle} = \frac{\text{arc length of circunference}}{\text{radius of circunference}} \tag{4}$$

- $\sin(x)$: In a circle of radius one, is the length of the opposite side.
- $\cos(x)$: In a circle of radius one, is the length of the adjacent side.
- By Pythagoras theorem $\sin^2 \alpha + \cos^2 \alpha = 1$
- Some special values

α	$\sin \alpha$	$\cos \alpha$
$\pi/2$	1	0
π	0	-1
$3\pi/2$	-1	0