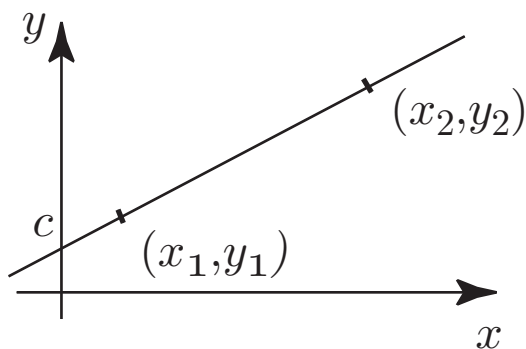


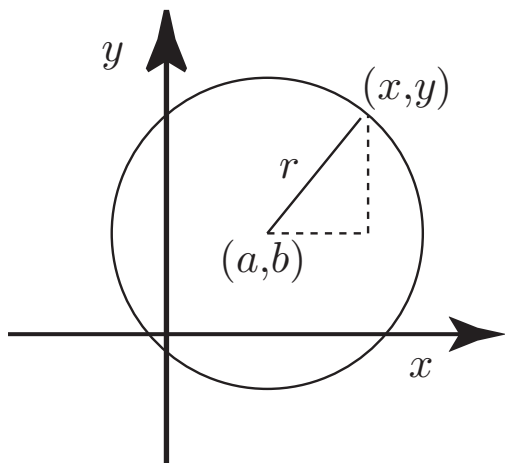
Graphs of common functions

Linear $y = mx + c$, m =gradient, c = vertical intercept



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

The equation of a circle centre (a, b) , radius r

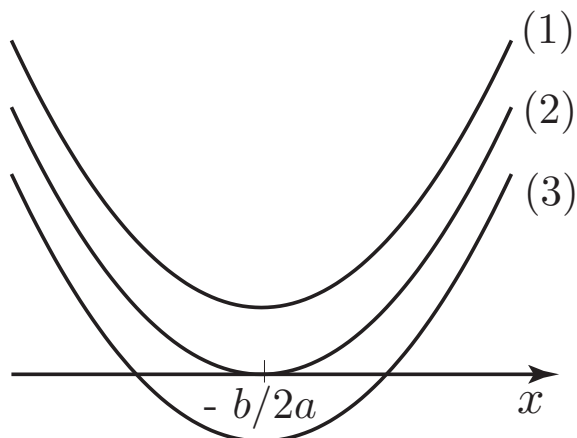


$$(x - a)^2 + (y - b)^2 = r^2$$

Completing the square

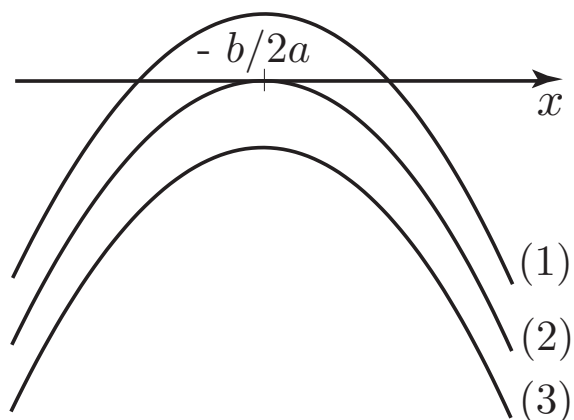
$$\text{If } a \neq 0, \quad ax^2 + bx + c = a \left(x + \frac{b}{2a} \right)^2 + \frac{4ac - b^2}{4a}$$

Quadratic functions $y = ax^2 + bx + c$



$$a > 0$$

- (1) $b^2 - 4ac < 0$
- (2) $b^2 - 4ac = 0$
- (3) $b^2 - 4ac > 0$

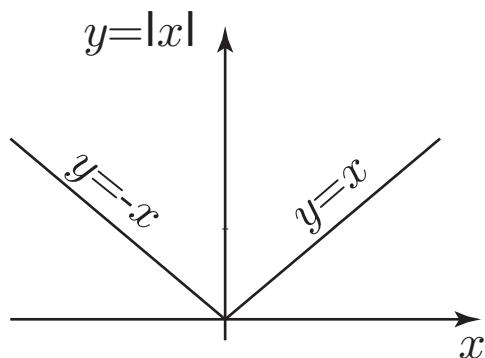


$$a < 0$$

- (1) $b^2 - 4ac > 0$
- (2) $b^2 - 4ac = 0$
- (3) $b^2 - 4ac < 0$

The modulus function

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$



The unit step function, $u(x)$

$$u(x) = \begin{cases} 1 & \text{if } x \geq 0 \\ 0 & \text{if } x < 0 \end{cases}$$

