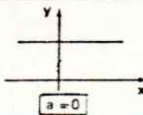
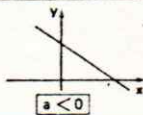
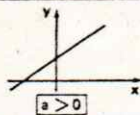


ÁLGEBRA - 3

FUNÇÃO LINEAR FUNÇÃO QUADRÁTICA

FUNÇÃO LINEAR: $f(x) = ax + b$

1. Gráficos: RETAS



EQUAÇÃO DE 2.º GRAU: $ax^2 + bx + c = 0$

1. Raízes: $x = \frac{-b \pm \sqrt{\Delta}}{2a}$, $\Delta = b^2 - 4ac$ (discriminante)

2. Soma das raízes: $S = x_1 + x_2 = -\frac{b}{a}$

3. Produto das raízes: $P = x_1 \cdot x_2 = \frac{c}{a}$

4. $x^2 - Sx + P = 0$

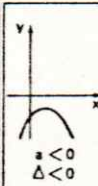
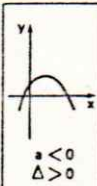
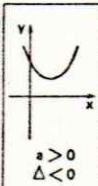
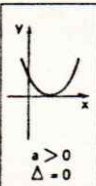
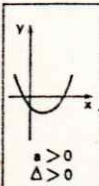
$\Delta = 0$: raízes iguais, reais

$\Delta > 0$: raízes diferentes, reais

$\Delta < 0$: raízes não reais

FUNÇÃO QUADRÁTICA: $f(x) = ax^2 + bx + c$

1. Gráficos: PARÁBOLAS



1. Domínio: $\mathbb{R}$

2. Imagem: $\{y \in \mathbb{R} \mid y \geq -\frac{\Delta}{4a}\}$ $a > 0$

$\{y \in \mathbb{R} \mid y \leq -\frac{\Delta}{4a}\}$ $a < 0$

3. Vértice: $V = (-\frac{b}{2a}; -\frac{\Delta}{4a})$

4. Forma fatorada: $f(x) = a(x - x_1)(x - x_2)$

VARIAÇÃO DE SINAL PARA $\Delta > 0$

$a > 0$: $\begin{array}{c} + \quad - \quad + \\ x_1 \quad x_2 \end{array}$

$a < 0$: $\begin{array}{c} - \quad + \quad - \\ x_1 \quad x_2 \end{array}$