ALGORITMO ALTERNATIVO

$$q = -\frac{1}{2}\left(b + \text{sign}(b)\sqrt{\Delta}\right)$$

$$x_1 = \frac{q}{a} \qquad x_2 = \frac{c}{q}$$

(se $a = 0$, equação 1º grau)

$$x_1 \cdot x_2 = \frac{q}{a} \cdot \frac{c}{q} = \frac{c}{a} \quad \checkmark$$

$$x_1 + x_2 = \frac{q}{a} + \frac{c}{q} = \frac{q^2 + ac}{aq} =$$

$$= \frac{\frac{1}{4}\left(b^2 + \Delta + 2b\,\text{sign}(b)\sqrt{\Delta}\right) + ac}{-\frac{a}{2}\left(b + \text{sign}(b)\sqrt{\Delta}\right)} =$$

$$= \frac{\frac{1}{4}\left(b^2 + b^2 - 4ac + 2b\,\text{sign}(b)\sqrt{\Delta}\right) + ac}{-\frac{a}{2}\left(b + \text{sign}(b)\sqrt{\Delta}\right)} =$$

$$= \frac{b^2/2 - ac + b/2\,\text{sign}(b)\sqrt{\Delta} + ac}{-\frac{a}{2}\left(b + \text{sign}(b)\sqrt{\Delta}\right)} = \frac{b\left(b + \text{sign}(b)\sqrt{\Delta}\right)}{-a\left(b + \text{sign}(b)\sqrt{\Delta}\right)}$$

$$= -\frac{b}{a} \quad \checkmark$$