12/3/2021

140 $-\frac{1}{2}x^2+\frac{5}{2}x-2>0$

$$\frac{-x^2+5x-4}{2}>0$$

$$-x^2+5x-4>0$$

$$x^2-5x+4<0$$

$$(x-4)(x-1)<0$$

$x_1=1$ $x_2=4$ $1<x<4$

$$ax^2+bx+c>0$$

$a>0$

$\Delta=0$

ESEMPI 1) $4x^2+4x+1>0$ $\quad \Delta=16-4\cdot 4=0$

$(2x+1)^2>0$ $\quad \forall x\neq -\frac{1}{2}$ $\quad S=\mathbb{R}\setminus\{-\frac{1}{2}\}$

2) $x^2-2x+1\geq 0$ $\quad \Delta=4-4=0$

$(x-1)^2\geq 0$ $\quad \forall x\in\mathbb{R}$ $\quad S=\mathbb{R}$

3) $2x^2-2\sqrt{2}x+1<0$ $\quad \Delta=8-8=0$

$(\sqrt{2}x-1)^2<0$ IMPOSSIBILE $\quad \nexists x\in\mathbb{R}$ $\quad S=\emptyset$

4) $9x^2-6x+1\leq 0$ $\quad \Delta=36-36=0$

$(3x-1)^2\leq 0$ $\quad x=\frac{1}{3}$ $\quad S=\{\frac{1}{3}\}$

IN GENERALE

$a > 0 \qquad \Delta = 0 \qquad ax^2 + bx + c = a(x - x_1)^2$

$$x_1 = \frac{-b \pm \sqrt{0}}{2a} = -\frac{b}{2a}$$

1) $ax^2 + bx + c > 0 \qquad \forall x \neq -\frac{b}{2a}$

2) $ax^2 + bx + c \geq 0 \qquad \forall x \in \mathbb{R}$

3) $ax^2 + bx + c < 0 \qquad$ IMPOSSIBILE

4) $ax^2 + bx + c \leq 0 \qquad x = -\frac{b}{2a}$

155 $-x^2+3x-\frac{9}{4}\geq 0$ $\left[x=\frac{3}{2}\right]$

$x^2-3x+\frac{9}{4}\leq 0 \qquad \Delta = 9-4\cdot\frac{9}{4}=0$

$x=-\frac{b}{2a}=-\frac{-3}{2\cdot 1}=\frac{3}{2}$ $\boxed{x=\frac{3}{2}}$

152 $x^2-2\sqrt{3}\,x+3>0$ $[\forall x\in \mathbf{R}-\{\sqrt{3}\}]$

$\frac{\Delta}{4}=\left(-\sqrt{3}\right)^2-1\cdot 3=3-3=0$

$-\frac{b}{2a}=-\frac{-2\sqrt{3}}{2\cdot 1}=\sqrt{3}$

$\boxed{\forall x\neq\sqrt{3}}$ $S=\mathbb{R}-\{\sqrt{3}\}$

156 $-x^2+10x-25>0$ [Impossibile]

157 $9x^2-6x+1\geq 0$ $[\forall x\in \mathbf{R}]$

156] $x^2-10x+25<0 \qquad \Delta=100-100=0$

IMPOSSIBILE

157] $9x^2-6x+1\geq 0 \qquad \Delta=36-36=0$

$\forall x\in\mathbb{R}$