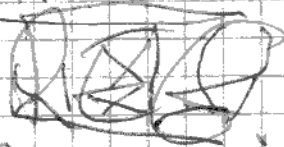


MATEMATICA O:

FRAZIONI:



$$\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}$$

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{\left(\frac{a}{b}\right)}{\left(\frac{c}{d}\right)} = \frac{ad}{bc} \quad \text{se } c \neq 0$$

EQUAZIONI DI II GRADO:

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

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x^2 + 1 = 0 \Rightarrow x = \frac{0 \pm \sqrt{0^2 - 4}}{2} = \frac{\pm \sqrt{-4}}{2} = \pm \sqrt{-1}$$

$$x^2 - 1 = 0 \Rightarrow x = \frac{0 \pm \sqrt{0^2 + 4}}{2} = \pm \frac{\sqrt{4}}{2} = \pm 1$$

LOGARITMI E ESPONENZIALI:

DEF.

$$\ln(x) \stackrel{\text{def}}{=} \int_1^x \frac{1}{t} dt \quad (\Rightarrow \ln(1) = 0)$$

se $x > 0$.

PROPRIETA':

$$\ln(ab) = \ln(a) + \ln(b), \quad \ln(1) = 0$$

DEF.

$$\ln(e) = 1.$$

SIA $b > 0, b \neq 1, x > 0$.

DEF.

$$\log_b(x) \stackrel{\text{def}}{=} \frac{\ln(x)}{\ln(b)}$$

$$(\Rightarrow \log_b(b) = 1)$$

PROPRIETA':

$$y = e^x \Leftrightarrow \ln(y) = x$$

$$- e^0 = 1$$

$$- e^1 = e$$

$$- e^{a+b} = e^a \cdot e^b$$

Sia $a > 0$,

DEF.

$$a^x \stackrel{\text{def}}{=} e^{x \ln(a)}$$

PROPRIETÀ:

$$- \ln(a^x) = x \ln(a)$$

$$- a^x \cdot a^y = a^{x+y}$$

$$- (a^x)^y = a^{xy} = (a^y)^x$$

$$- y = a^x \stackrel{(a \neq 1)}{\Leftrightarrow} x = \frac{\ln(y)}{\ln(a)} \quad (= \log_a(y))$$