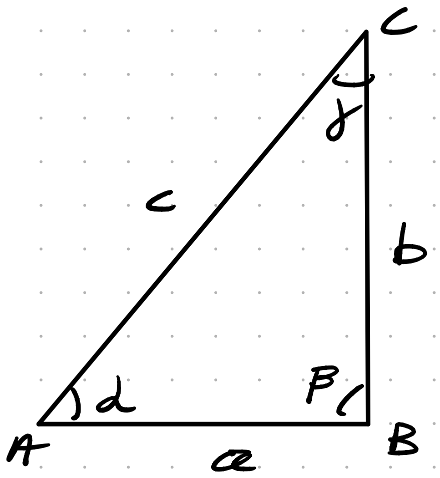
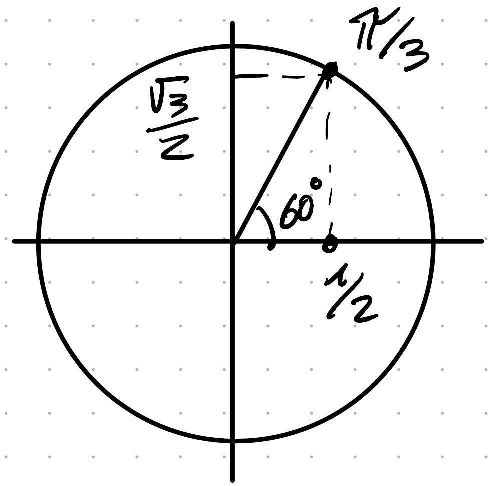
LEZIONE 7

$$a = c \cdot \operatorname{sen} \gamma = c \cdot \cos \alpha$$
$$b = c \cdot \operatorname{sen} \alpha = c \cdot \cos \gamma$$

$$a = b \cdot \tan \gamma = b \cdot \operatorname{cotan} \alpha$$
$$b = a \cdot \tan \alpha = b \cdot \operatorname{cotan} \gamma$$

$$\alpha + \beta + \gamma = 180^\circ$$

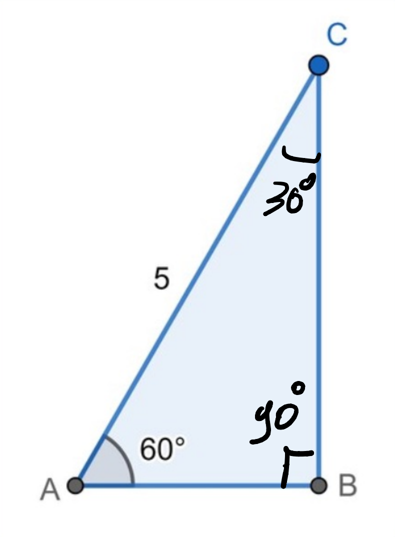




2

Dato il triangolo rettangolo in B com in figura, si può dire che:

(1 punto)



- $\overline{AB} = \frac{5}{2}$ e $\sqrt{3}\,\overline{BC} = \frac{5}{2}$
- $\overline{AB} = \frac{5}{2}$ e $\overline{BC} = \frac{5}{2}\sqrt{3}$
- $\overline{AB} = 3$ e $\overline{BC} = 4$
- $\overline{AB} = 4$ e $\overline{BC} = 3$

$$\overline{AB} = \overline{AC} \cdot \cos 60^\circ = 5 \cdot \frac{1}{2} = \frac{5}{2}$$

oppure

$$\overline{AB} = \overline{AC} \cdot \operatorname{sen} 30^\circ$$

$$\overline{BC} = \overline{AC} \cdot \sin 60^\circ = 5 \cdot \frac{\sqrt{3}}{2} = \frac{5}{2}\sqrt{3}$$

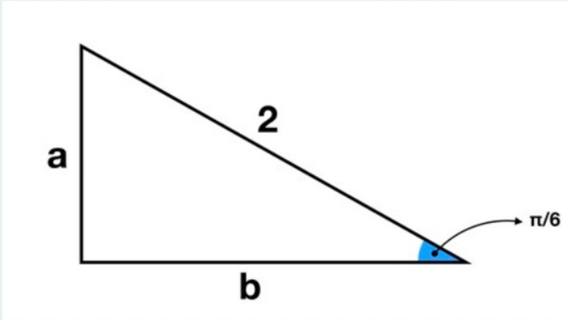
oppure

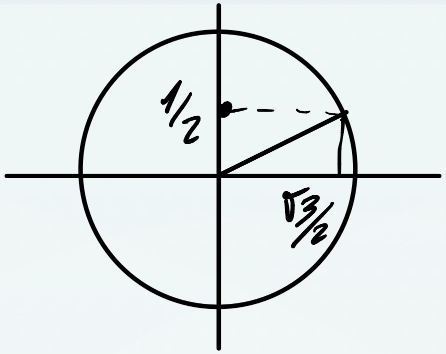
$$\overline{BC} = \overline{AC} \cdot \cos 30^\circ$$

3

In queso triangolo i cateti a e b misurano

(1 punto)





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

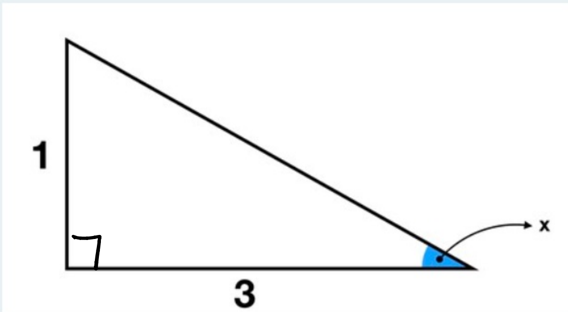
$$a = 2 \cdot \operatorname{sen} \frac{\pi}{6} \overset{!}{=} 2 \cdot \frac{1}{2} = 1$$

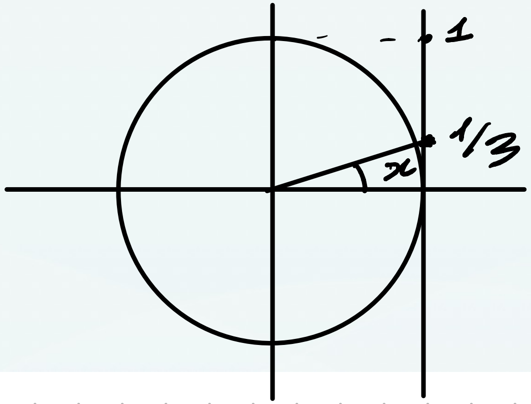
$$b = 2 \cdot \cos \frac{\pi}{6} \overset{!}{=} 2 \cdot \frac{\sqrt{3}}{2} = \sqrt{3}$$

4

In questo triangolo l'angolo *x* misura

(1 punto)





- $x = \frac{\pi}{2}$
- $x = \arctan 3$
- $x = \arctan\left(\frac{1}{3}\right)$
- $x = \tan 3$

$$0 \leq x \leq \pi$$

$$1 = 3 \cdot \tan x$$

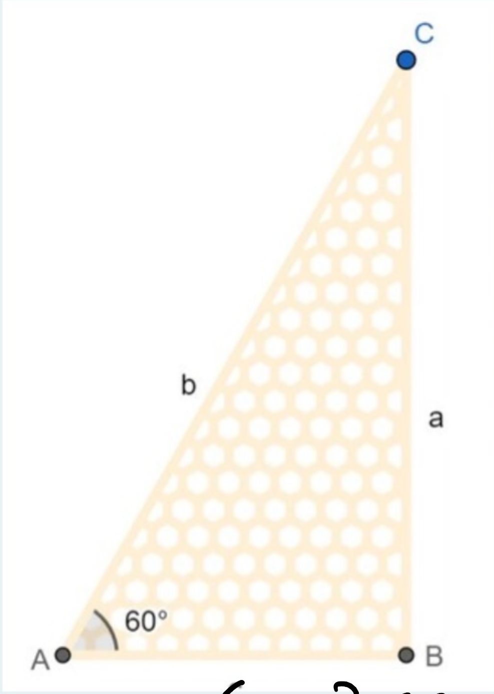
$$\hookrightarrow \tan x = \frac{1}{3}$$

$$\hookrightarrow x = \arctan\left(\frac{1}{3}\right)$$

5

Nel triangolo rappresentato nell'immagine se c misura 3 cm la misura del lato b è

(1 punto)



$c = 3\ cm$

- ◯ 2.8 cm
- ◯ 5.19 cm
- ◯ 6 cm
- ◯ 6.3 cm

$$c = b \cdot \cos 60^\circ$$

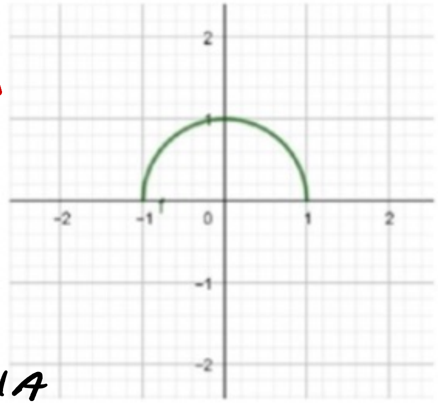
$$\Rightarrow b = \frac{c}{\cos 60^\circ} = \frac{3}{1/2} = 3 \cdot 2 = 6\ cm$$

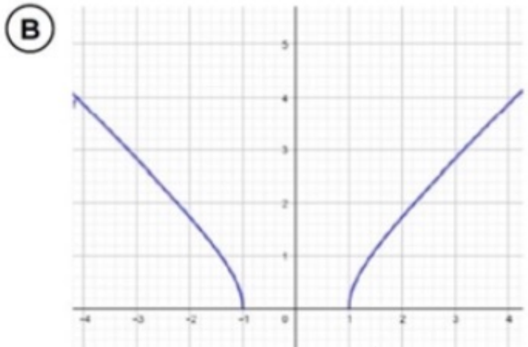
• $y = \sqrt{-x^2+1}$

↳ $y^2 = -x^2+1$

↳ $x^2+y^2 = 1$

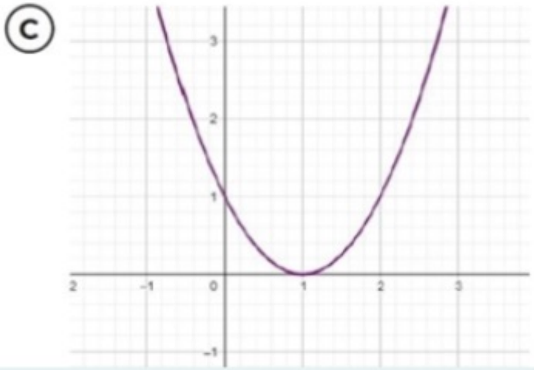
EQUAZIONE CIRC. UNITARIA





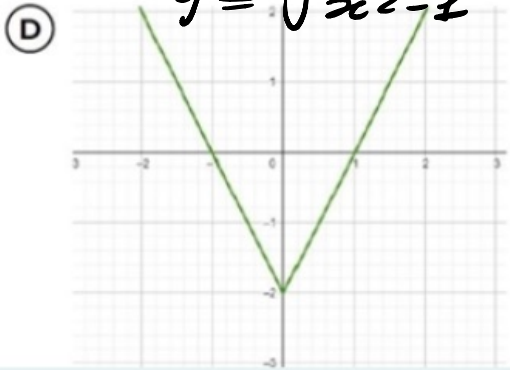
IPERBOLE

$y = \sqrt{x^2-1}$



PARABOLA

$y = (x-1)^2$



MODULO

$y = |2x| - 2$

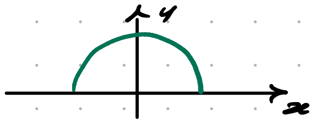
CIRCONFERENZA

$C(x_0, y_0) \to (x-x_0)^2+(y-y_0)^2 = r^2$

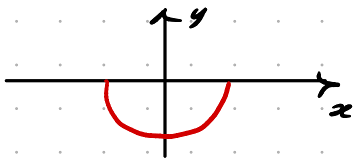
$x_0 = y_0 = 0 \to x^2+y^2 = r^2$

$y^2 = r^2 - x^2 \Rightarrow y = \pm\sqrt{r^2-x^2}$

$y = \sqrt{r^2-x^2} \geq 0 \to$



$y = -\sqrt{r^2-x^2} < 0 \to$

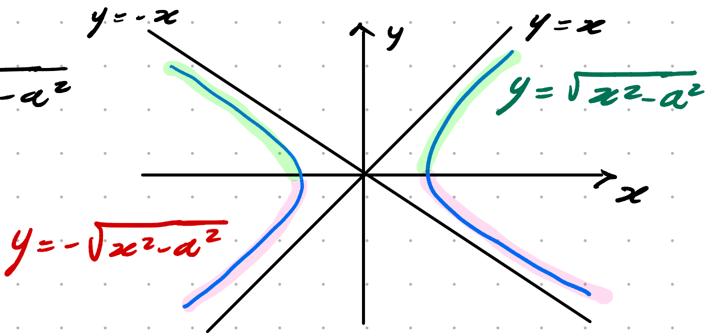


IPERBOLE

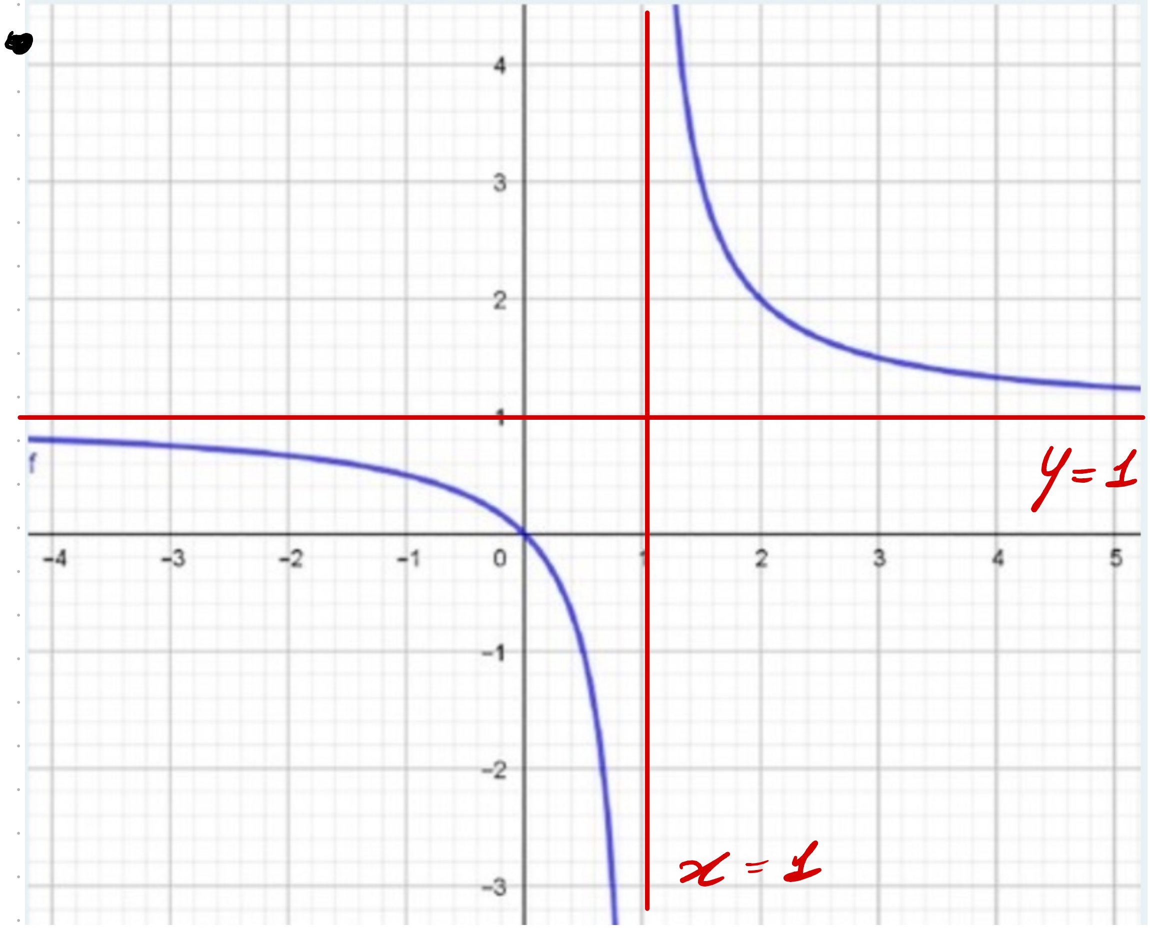
$$\left.\begin{array}{l} \dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1 \\ y = \pm \dfrac{b}{a} x \end{array}\right\} \to \text{EQUILATERA} \Rightarrow a = b \Rightarrow \begin{array}{l} x^2 - y^2 = a^2 \\ y = \pm x \end{array}$$

↳ asintoti

$\Rightarrow y^2 = x^2 - a^2 \Rightarrow y = \pm\sqrt{x^2-a^2}$



$\Rightarrow y = \sqrt{x^2-1}$



1) $y = \frac{1}{x} \to \lim_{x \to \pm\infty} \frac{1}{x} = 0 \Rightarrow$ NO!!!

2) $\boxed{y = \frac{x}{x-1}}$ SI!!!

↳ $\lim_{x \to \pm\infty} \frac{x}{x-1} = 1$ OK!

se $x = 0 \Rightarrow y = 0$ OK!

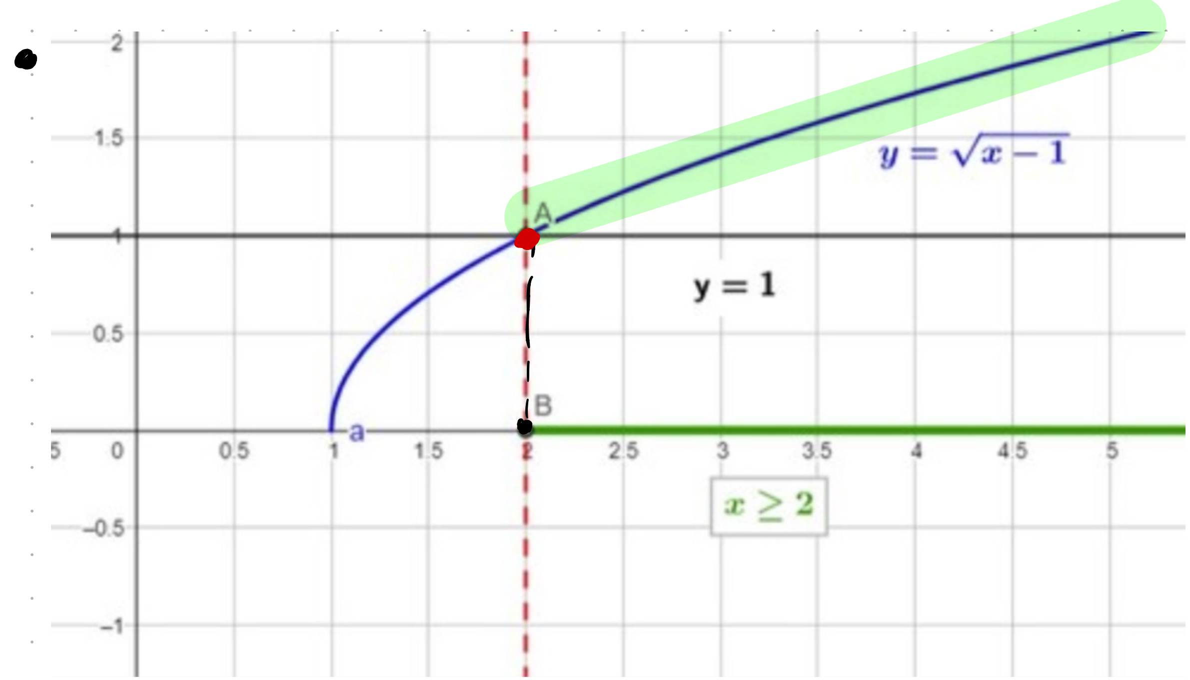
$\lim_{x \to 1^-} \frac{x}{x-1} = -\infty$ OK!

$\lim_{x \to 1^+} \frac{x}{x-1} = +\infty$ OK!

3) $y = \frac{x-1}{x} \to \lim_{x \to \pm\infty} \frac{x-1}{x} = 1$

$\lim_{x \to 0^-} \frac{x-1}{x} = +\infty$, $\lim_{x \to 0^+} \frac{x-1}{x} = -\infty \to$ NO!

4) $y = 1 - \frac{1}{x} = \frac{x-1}{x} \to$ NO!



$\forall x \geq 2,\ \sqrt{x-1} > 1$ NO!
$\forall x \geq 2,\ \sqrt{x-1} \geq 1$ SI!
oppure
$\forall x > 2,\ \sqrt{x-1} > 1$ SI!
o maggiori uguali
o escludo $x = 2$

maggiori uguali

- [x] Tutti i punti appartenenti alla semiretta verde sono tali che i rispettivi valori sulla curva blu sono maggiori di quelli della retta grigia.

  $\hookrightarrow \forall x \geq 2,\ \sqrt{x-1} \geq 1$

- [ ] La curva blu è sempre maggiore della retta grigia. NO
- [x] La semiretta verde è soluzione dell'equazione $\sqrt{x-1} \geq 1$
- [ ] La semiretta verde è soluzione dell'equazione $\sqrt{x-1} \leq 1$ NO
- [ ] L'equazione $\sqrt{x-1} = 1$ non ammette soluzione. NO! in $x = 2$ $\sqrt{x-1} = \sqrt{2-1} = \sqrt{1} = 1$
- [x] L'equazione $\sqrt{x-1} = 1$ ammette una unica soluzione. PUNTO A
- [ ] La curva blu è sempre maggiore della semiretta verde.