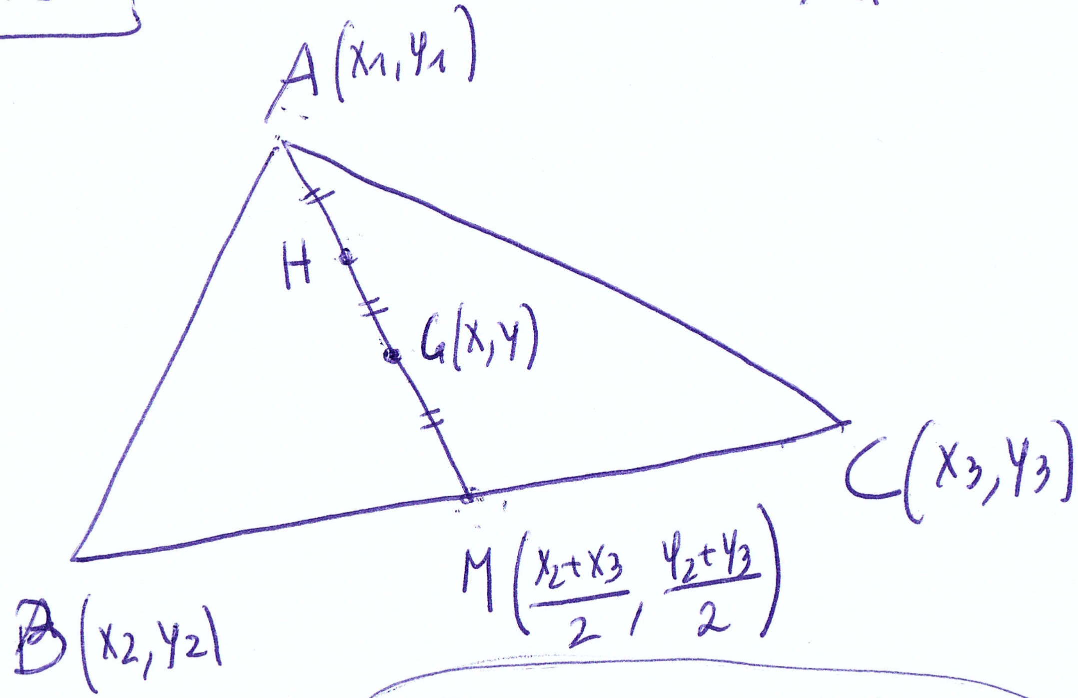
$\boxed{1-10-2018}$

$\overline{AG} = 2\,\overline{GM}$

25



$$H\left(\frac{x+x_1}{2}, \frac{y+y_1}{2}\right)$$

$$x = \frac{\frac{x+x_1}{2} + \frac{x_2+x_3}{2}}{2} = \frac{x+x_1+x_2+x_3}{4}$$

$$4x = x+x_1+x_2+x_3 \qquad 3x = x_1+x_2+x_3$$

$$x = \frac{x_1+x_2+x_3}{3}$$

26

$r: ax+by+c=0 \qquad s: a_1x+b_1y+c_1=0$

$$r \parallel s \iff \frac{a}{a_1}=\frac{b}{b_1} \iff \frac{a}{b}=\frac{a_1}{b_1} \iff \underset{m_r}{\underset{\parallel}{-\frac{a}{b}}} = \underset{m_s}{\underset{\parallel}{-\frac{a_1}{b_1}}}$$

$$ax+by+c=0 \qquad y=\underset{m}{\underset{\parallel}{-\frac{a}{b}}}x\underset{q}{\underset{\parallel}{-\frac{c}{b}}}$$

$m \rightarrow$ coeff. angolare della retta

$$r \parallel s \iff m_r = m_s$$

$$r \perp s \iff m_r = -\frac{1}{m_s}$$

Rette per $P(x_0, y_0)$ di coeff. angolare m:

$$\boxed{y - y_0 = m(x - x_0)}$$

$$y_0 - y_0 = m(x_0 - x_0)$$

$$0 = m \cdot 0 = 0$$

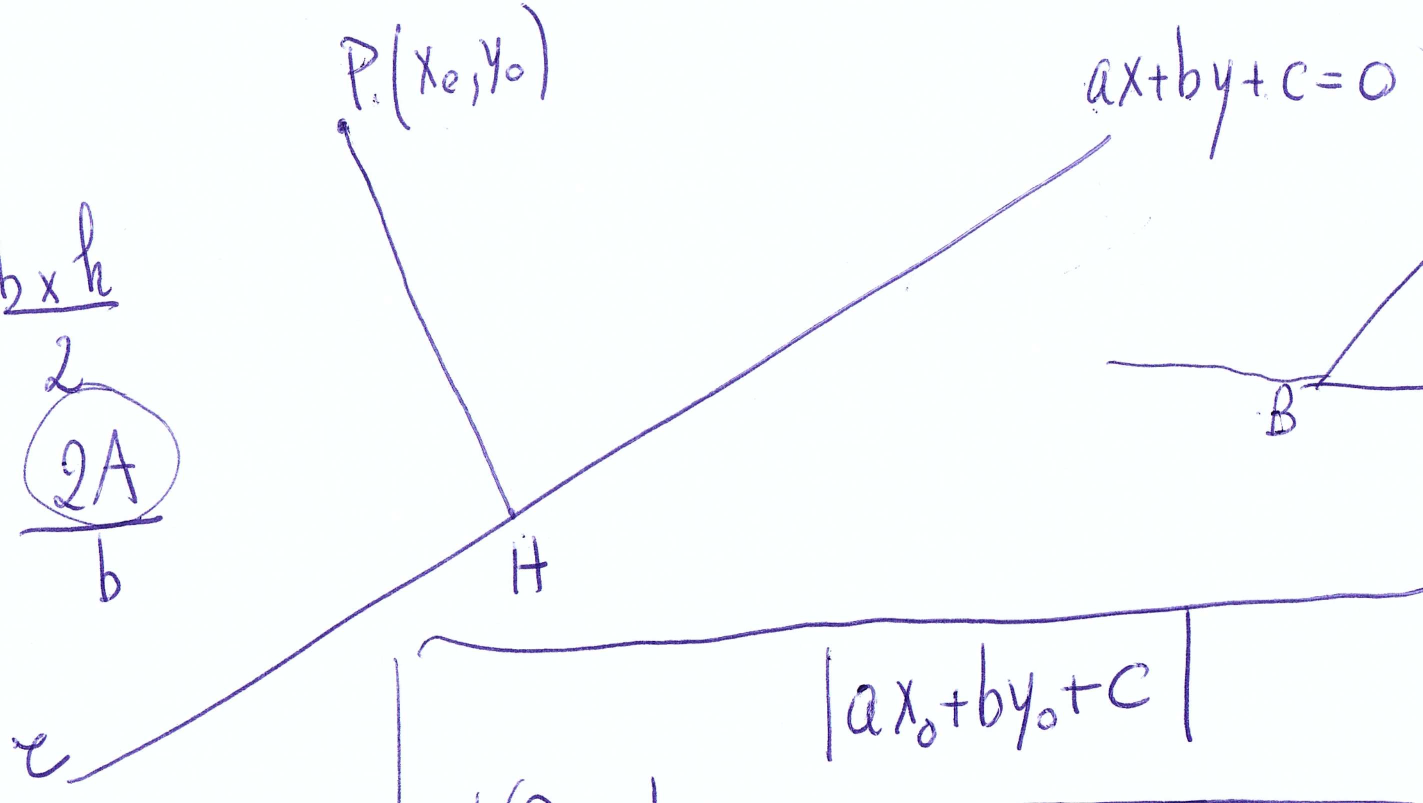
$$y - y_0 = mx - mx_0$$

$$y = mx + \underbrace{y_0 - mx_0}_{q}$$

28

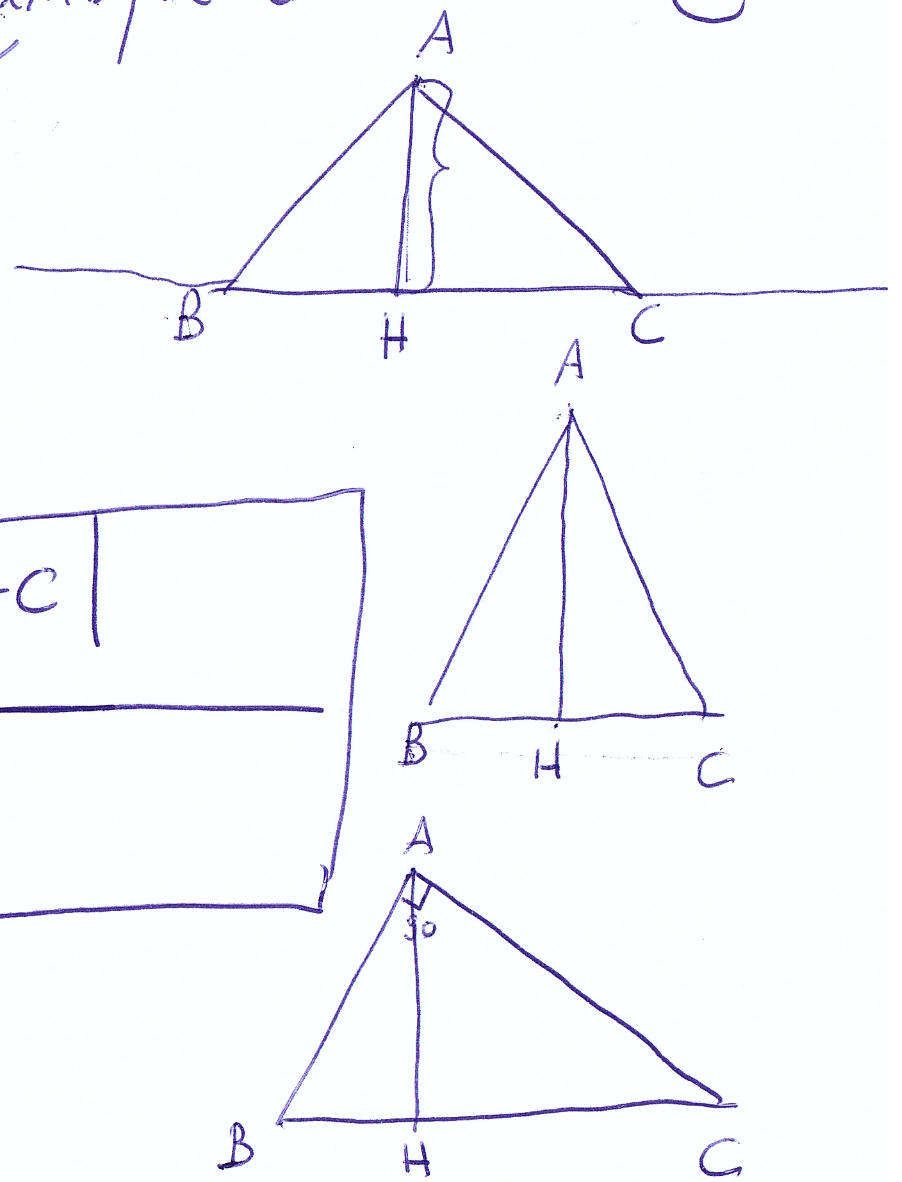
$$A = \frac{b \times h}{2}$$

$$h = \frac{2A}{b}$$



$$\boxed{d(P, r) = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}}}$$

$$AH = \frac{AB \cdot AC}{BC}$$



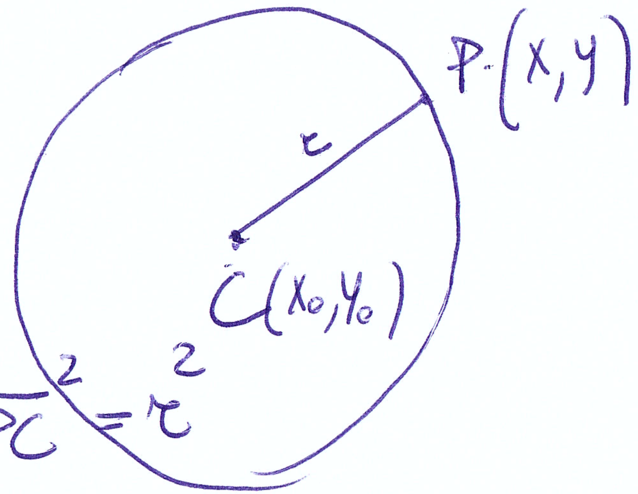
CONICHE

Insieme dei punti che verificano un'equazione di 2° grado in x, y.

$$ax^2 + by^2 + cxy + dx + ey + f = 0$$

CIRCONFERENZA. LUOGO DEI PUNTI DEL PIANO EQUIDISTANTI DA UN PUNTO FISSATO (CENTRO). LA DISTANZA È CHIAMATA RAGGIO.

$C(x_0, y_0) \qquad r > 0$



$$P \in \mathcal{C}(C, r) \Leftrightarrow \overline{PC} = r \Leftrightarrow \overline{PC}^2 = r^2$$

$$\boxed{(x - x_0)^2 + (y - y_0)^2 = r^2}$$

$$x^2 + x_0^2 - 2x_0x + y^2 + y_0^2 - 2y_0y - r^2 = 0$$

$$x^2 + y^2 - 2x_0 x - 2y_0 y + x_0^2 + y_0^2 - r^2 = 0$$

$$\boxed{x^2 + y^2 + ax + by + c = 0}$$

(1) Manca xy (2) i coeff. di x^2, y^2 sono uguali ("a 1") [31

$$x^2+y^2+ax+by+c=0 \qquad x^2+ax+y^2+by=-c$$

$$x^2+ax+\frac{a^2}{4}+y^2+by+\frac{b^2}{4}=\frac{a^2}{4}+\frac{b^2}{4}-c$$

$$\left(x+\frac{a}{2}\right)^2+\left(y+\frac{b}{2}\right)^2=\frac{a^2}{4}+\frac{b^2}{4}-c > 0$$

$P(x,y)$ $C\left(-\frac{a}{2},-\frac{b}{2}\right)$

$$r=\sqrt{\frac{a^2}{4}+\frac{b^2}{4}-c}$$

$$x^2+y^2+2x+5y+7=0$$

$C\left(-1,-\frac{5}{2}\right)$

$$1+\frac{25}{4}-7=\frac{4+25-28}{4}=\frac{1}{4}$$

$r=\frac{1}{2}$

32

$$2x^2+2y^2+3x+5y-1=0$$

$$x^2+y^2+\frac{3}{2}x+\frac{5}{2}y-\frac{1}{2}=0 \qquad C\left(-\frac{3}{4},-\frac{5}{4}\right)$$

$$\frac{9}{16}+\frac{25}{16}+\frac{1}{2}=\frac{34}{16}+\frac{1}{2}=\frac{17}{8}+\frac{1}{2}=\frac{17+4}{8}=\frac{21}{8}$$

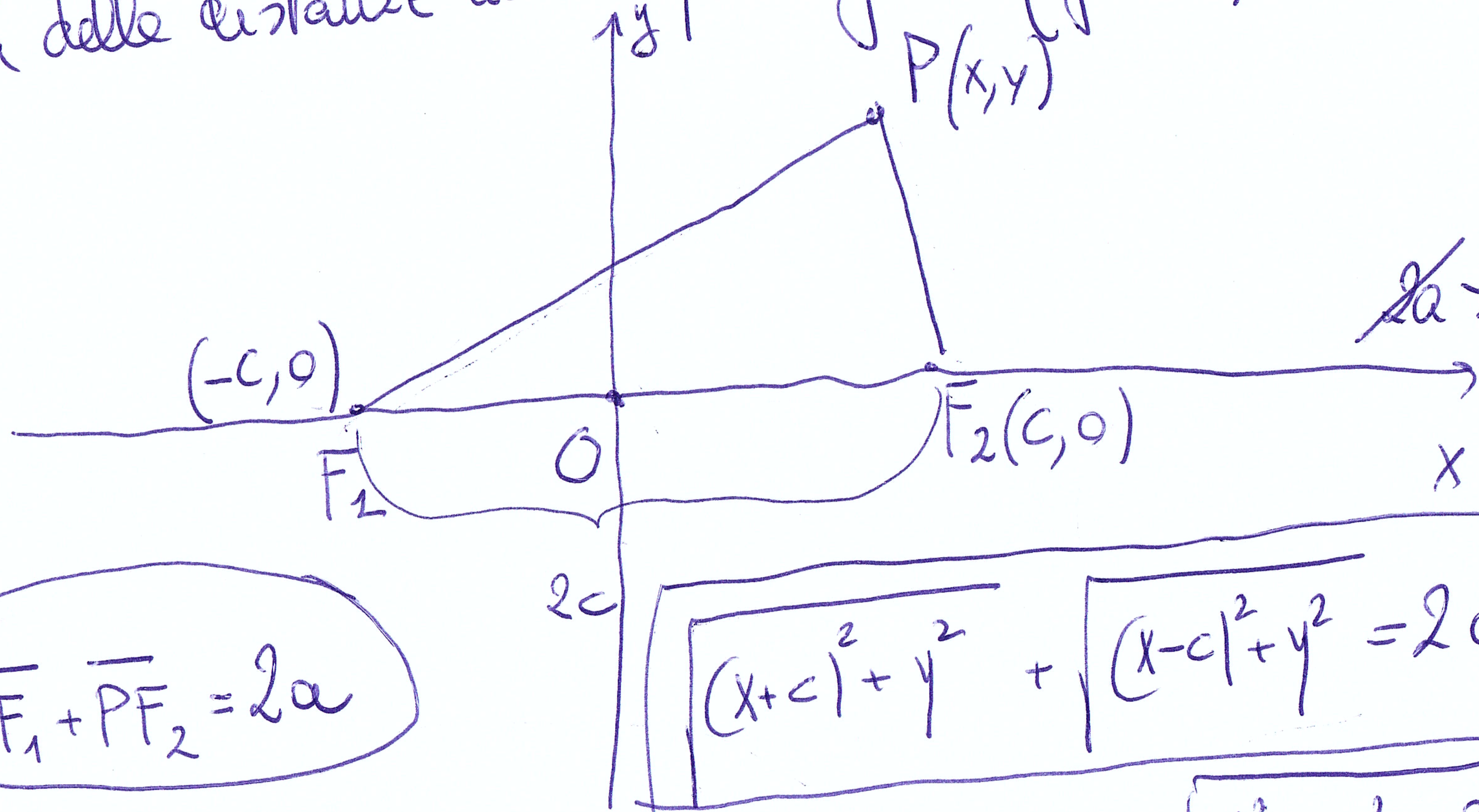
$$r=\sqrt{\frac{21}{8}}$$

$$x^2+y^2+2x+4y+8=0 \qquad C(-1,-2)$$ non è una circ.

$$1+4-8=-3<0$$

ELLISSE

È il luogo geometrico dei punti del piano per i quali è costante la somma delle distanze da due punti fissi (fuochi).



$c>0$

$a>0$

$\cancel{2}a > \cancel{2}c$

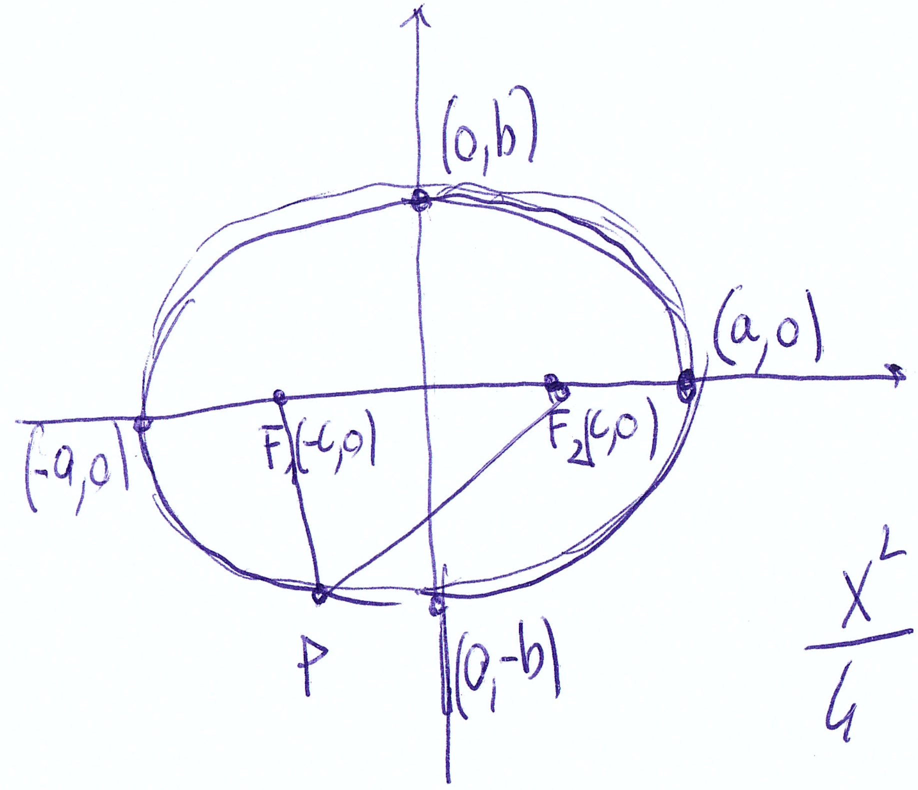
$\overline{PF_1} + \overline{PF_2} = 2a$

$$\boxed{\sqrt{(x+c)^2+y^2} + \sqrt{(x-c)^2+y^2} = 2a}$$

$$\boxed{b^2 = a^2 - c^2}$$

$$\boxed{\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1}$$

34



$a=2 \quad b=3$

$$\frac{x^2}{4}+\frac{y^2}{9}=1$$

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$$

$a<b$

$F_1(0,-c)$

$F_2(0,c)$

$a^2=b^2-c^2$

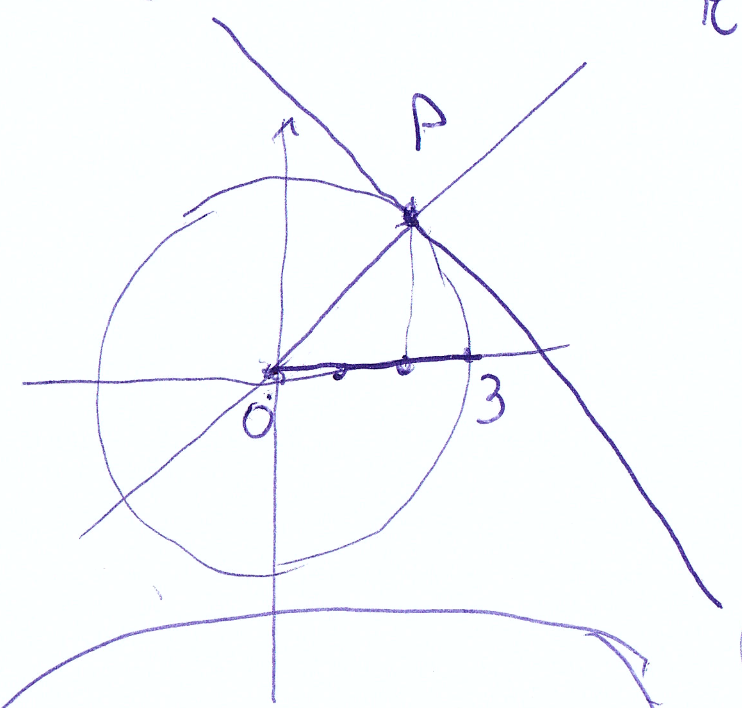
35

$x^2 + y^2 = 9$

$C(0,0)$

$r = 3$

$P(\cancel{0}2, \sqrt{5})$



$P(x_1, y_1)\ Q(x_2, y_2)$

$m_{PQ} = \frac{y_1 - y_2}{x_1 - x_2}$

$m_{OP} = \frac{\sqrt{5} - 0}{2 - 0} = \frac{\sqrt{5}}{2}$

$m_{\perp} = -\frac{2}{\sqrt{5}}$

$y - \sqrt{5} = -\frac{2}{\sqrt{5}}(x - 2)$