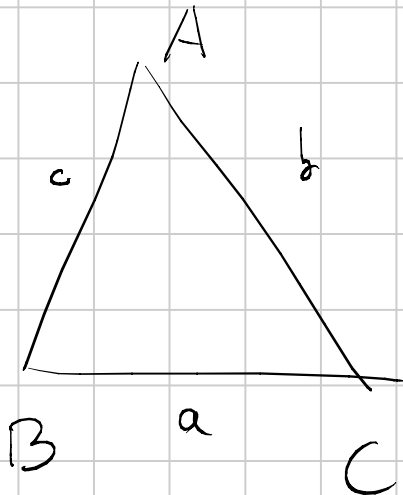


Senior 2006 - G2 - esercizi (4, 6, 8, 10)

Titolo nota

12/09/2006

6)



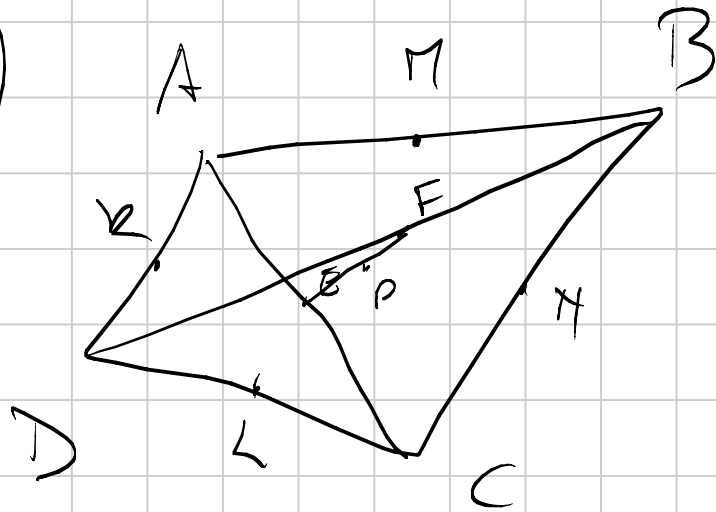
$$\begin{aligned} \vec{M}_A &= \frac{\vec{B} + \vec{C}}{2} \\ \|\vec{M}_A - \vec{A}\|^2 &= \\ &= \left\| \frac{\vec{B} + \vec{C} - 2\vec{A}}{2} \right\|^2 = \\ &= \frac{1}{4} \left\| (\vec{B} - \vec{A}) + (\vec{C} - \vec{A}) \right\|^2 = \\ &= \frac{1}{4} \|\vec{B} - \vec{A}\|^2 + \frac{1}{4} \|\vec{C} - \vec{A}\|^2 + \frac{2}{4} \langle \vec{B} - \vec{A}, \vec{C} - \vec{A} \rangle \end{aligned}$$

$$\begin{aligned}
&= \frac{1}{4} \left(c^2 + b^2 + 2(\langle \vec{B}, \vec{C} \rangle - \langle \vec{A}, \vec{C} \rangle + \langle \vec{A}, \vec{A} \rangle - \langle \vec{B}, \vec{A} \rangle) \right) \\
&\frac{1}{4} \left(a^2 + c^2 + 2(\langle \vec{A}, \vec{C} \rangle - \langle \vec{B}, \vec{C} \rangle + \langle \vec{B}, \vec{B} \rangle - \langle \vec{A}, \vec{B} \rangle) \right) \\
&\frac{1}{4} \left(a^2 + b^2 + 2(\langle \vec{A}, \vec{B} \rangle - \langle \vec{A}, \vec{C} \rangle + \langle \vec{C}, \vec{C} \rangle - \langle \vec{B}, \vec{C} \rangle) \right)
\end{aligned}$$

can outside and with.

$$\begin{aligned}
&= \frac{1}{4} \left(2a^2 + 2b^2 + 2c^2 + 2(-\langle \vec{A}, \vec{C} \rangle - \langle \vec{A}, \vec{B} \rangle - \langle \vec{B}, \vec{C} \rangle + \langle \vec{A}, \vec{A} \rangle \right. \\
&\quad \left. + \langle \vec{B}, \vec{B} \rangle + \langle \vec{C}, \vec{C} \rangle) \right) \\
\langle \vec{A}, \vec{C} \rangle &= R^2 - \frac{b^2}{2} \quad = \frac{1}{4} \left(2(a^2 + b^2 + c^2) + 2 \left(3R^2 - 3R^2 + \frac{b^2 + c^2 + a^2}{2} \right) \right) \\
&= \frac{3}{4} (a^2 + b^2 + c^2)
\end{aligned}$$

8)



pT. med $\vec{r}_A, \vec{r}_B, \vec{r}_C, \vec{r}_D$

$$= \frac{\vec{A} + \vec{B} + \vec{C} + \vec{D}}{4}$$

$$\vec{M} = \frac{\vec{A} + \vec{B}}{2}$$

$$\vec{N} = \frac{\vec{C} + \vec{D}}{2}$$

$$\vec{L} = \frac{\vec{A} + \vec{D}}{2}$$

$$\vec{K} = \frac{\vec{B} + \vec{C}}{2}$$

pT med $\vec{r}_K, \vec{r}_L, \vec{r}_M, \vec{r}_N$

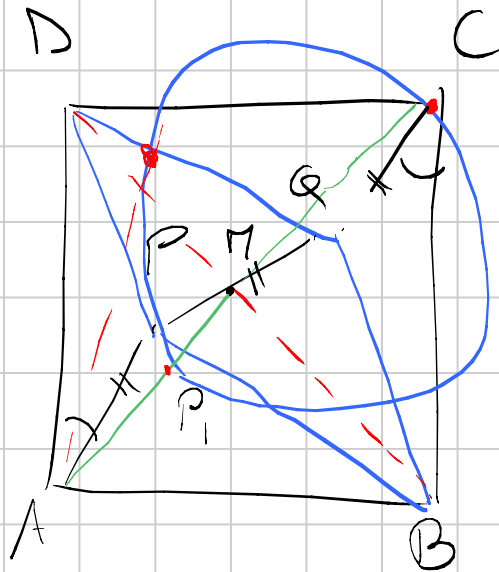
$$\frac{\vec{K} + \vec{L} + \vec{M} + \vec{N}}{4}$$

$$\vec{E} = \frac{\vec{A} + \vec{C}}{2}$$

$$\vec{F} = \frac{\vec{B} + \vec{D}}{2}$$

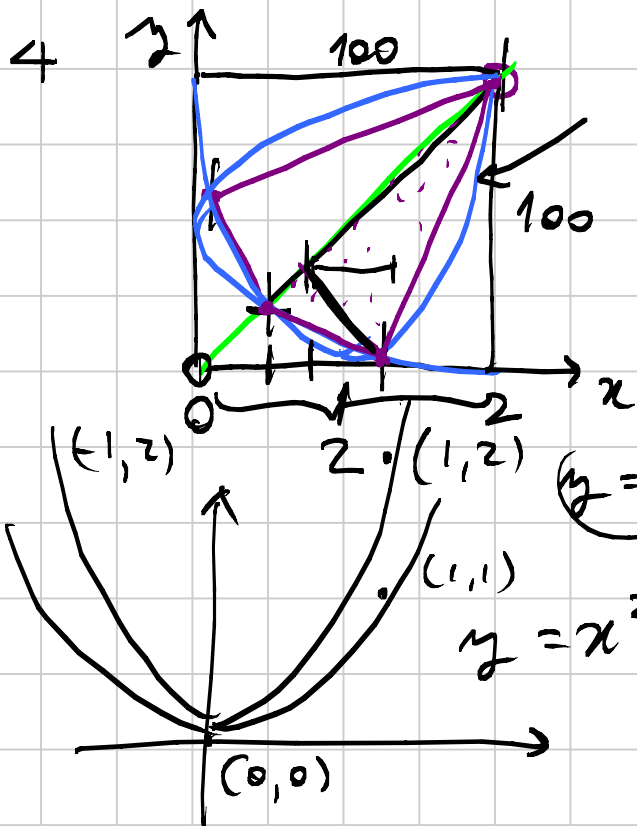
$$\begin{aligned} \vec{P} &= \frac{\vec{E} + \vec{F}}{2} \\ &= \frac{\vec{A} + \vec{B} + \vec{C} + \vec{D}}{4} \end{aligned}$$

10)



$$AP = 2PM$$

cf. di diam P_1C



$$\begin{cases} y = 2(x-1)^2 \\ x = 2(y-1)^2 \end{cases}$$

$$\frac{\sqrt{5}}{4} \sqrt{2} \frac{3}{2} \sqrt{2} = \frac{3}{4} \sqrt{5}$$

$$35^4 \sqrt{5}$$

$$y = 2x^2$$

traslare
a destra
di 1

$$y = x^2$$

$$x = 2(2(x-1)^2 - 1)^2 = 8x^4 + \dots$$

$$x = \frac{1}{2}, 2$$

$$x = y \Rightarrow x = 2(x-1)^2 \quad 2x^2 - 5x + 2 = 0$$

$$(x-2)(2x-1) = 0$$

$x = \frac{1}{2}, 2$ sono soluzioni di quella
di quarto grado.

$$8x^4 - 32x^3 + 40x^2 - 17x + 2 = 0$$

divido per $(x-2)$ e poi per $(2x-1)$

$$4x^2 - 6x + 1 = 0$$

$$x = \frac{3 \pm \sqrt{9-4}}{4}$$