



Maxima 5.30.0 <http://maxima.sourceforge.net>
 using Lisp GNU Common Lisp (GCL) GCL 2.6.7 (a.k.a. GCL)
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 Dedicated to the memory of William Schelter.

Cercle et droite d'Euler

Chargement des macros gdd et quelques instructions de configurations (cachées).

```
▷ load("../gdd.mac")$
```

Soit un triangle de base.

```
▷ A:Point(0,0);
```

```
point(0,0)
```

```
▷ B:Point(4,0);
```

```
point(4,0)
```

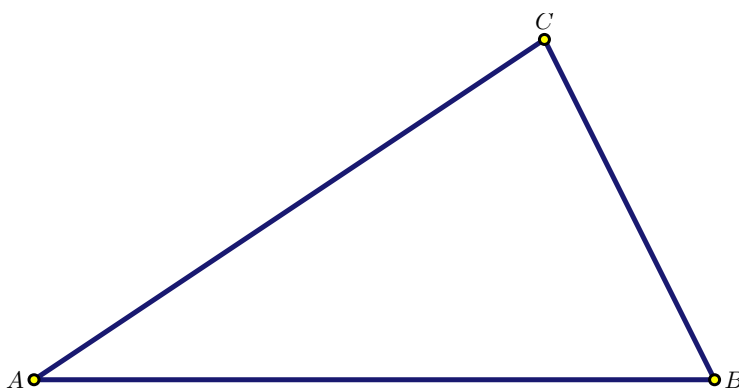
```
▷ C:Point(3,2);
```

```
point(3,2)
```

```
▷ T:Triangle(A,B,C);
```

```
triangle(point(0,0),point(4,0),point(3,2))
```

```
▷ Figure('A','B','C','T');
```



Le cercle circonscrit et son centre Ω :

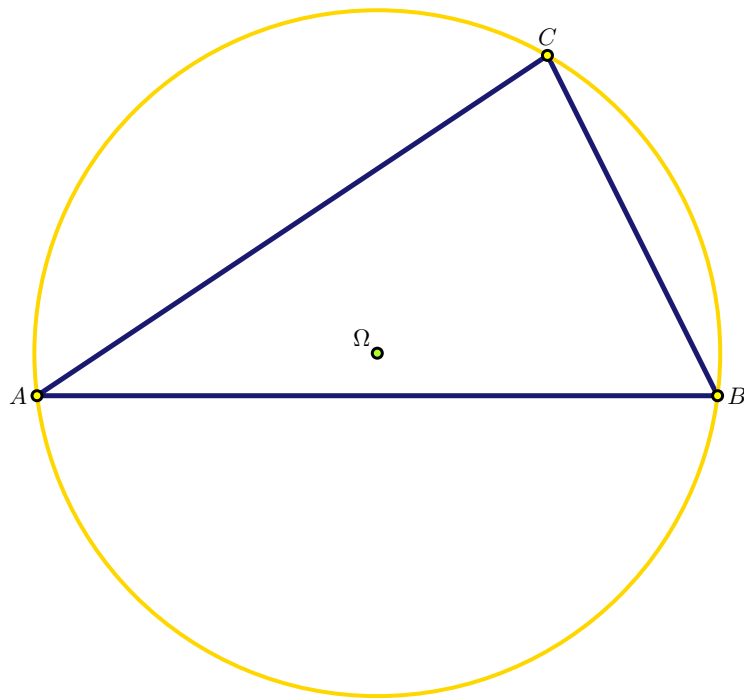
```
▷ Omega:PointTriangle(T,"O");
```

```
point(2, 1/4)
```

```
▷ c:CercleCentrePoint(Omega,A);
```

```
cercle(point(2, 1/4), sqrt(65)/4)
```

```
▷ Figure('Omega','c');
```



Les milieux des trois côtés et le cercle circonscrit au triangle formé par ces points.

▷ I1:Milieu(B,C);

point $\left(\frac{7}{2}, 1\right)$

▷ I2:Milieu(C,A);

point $\left(\frac{3}{2}, 1\right)$

▷ I3:Milieu(A,B);

point $(2, 0)$

▷ t:Triangle(I1,I2,I3);

triangle $\left(\text{point}\left(\frac{7}{2}, 1\right), \text{point}\left(\frac{3}{2}, 1\right), \text{point}(2, 0)\right)$

▷ omega:PointTriangle(t, "0");

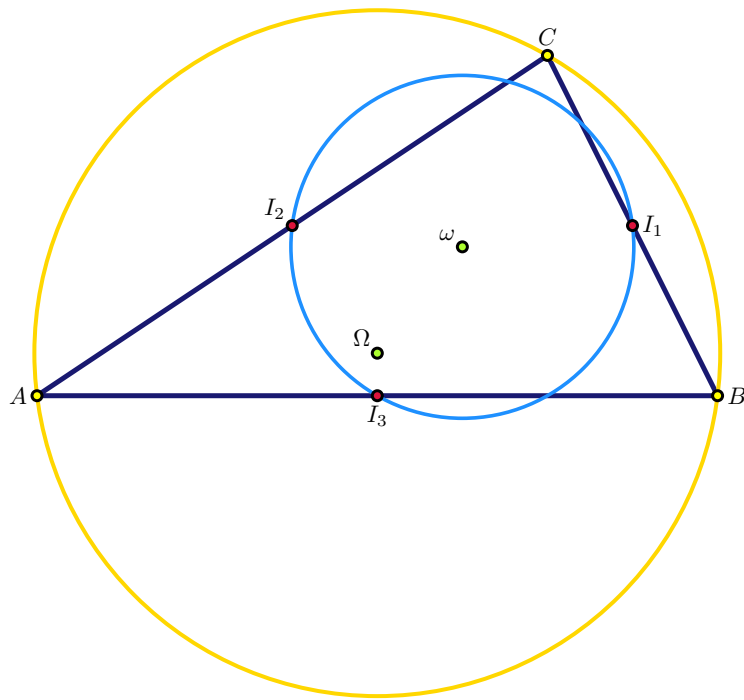
point $\left(\frac{5}{2}, \frac{7}{8}\right)$

▷ ce:CercleCentrePoint(omega, I1);

cercle $\left(\text{point}\left(\frac{5}{2}, \frac{7}{8}\right), \frac{\sqrt{65}}{8}\right)$

Une évidence : le rayon de ce deuxième cercle est égal à la moitié de celui du premier.

▷ Figure('I1, 'I2, 'I3, 'omega, 'ce);



Les pieds des hauteurs.

▷ J1:Projection(A,Droite(B,C));

point $\left(\frac{16}{5}, \frac{8}{5}\right)$

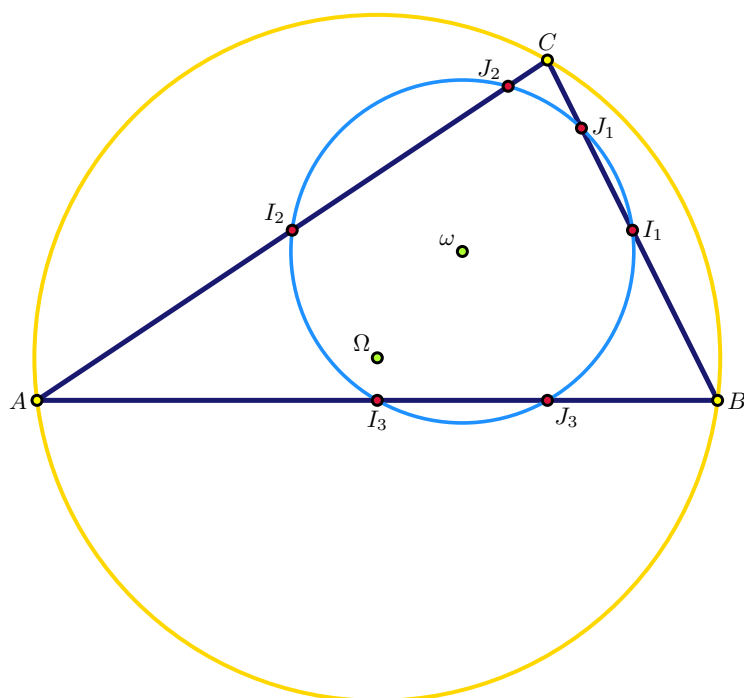
▷ J2:Projection(B,Droite(C,A));

point $\left(\frac{36}{13}, \frac{24}{13}\right)$

▷ J3:Projection(C,Droite(A,B));

point (3,0)

▷ Figure('J1','J2','J3');



Les milieux des segments qui joignent l'orthocentre aux sommets du triangle...

▷ `H:PointTriangle(T,"H");`

`point(3, $\frac{3}{2}$)`

▷ `H1:Milieu(H,A);`

`point($\frac{3}{2}$, $\frac{3}{4}$)`

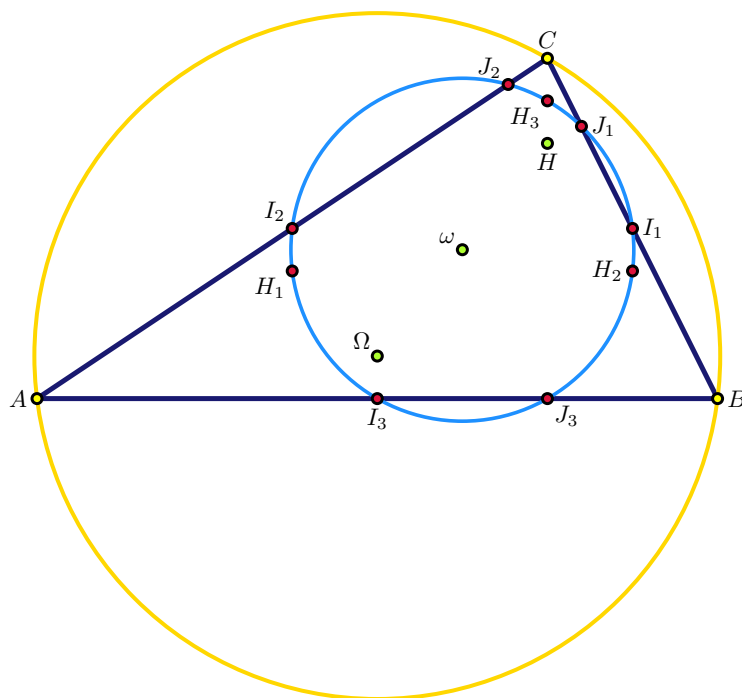
▷ `H2:Milieu(H,B);`

`point($\frac{7}{2}$, $\frac{3}{4}$)`

▷ `H3:Milieu(H,C);`

`point(3, $\frac{7}{4}$)`

▷ `Figure('H','H1','H2','H3');`



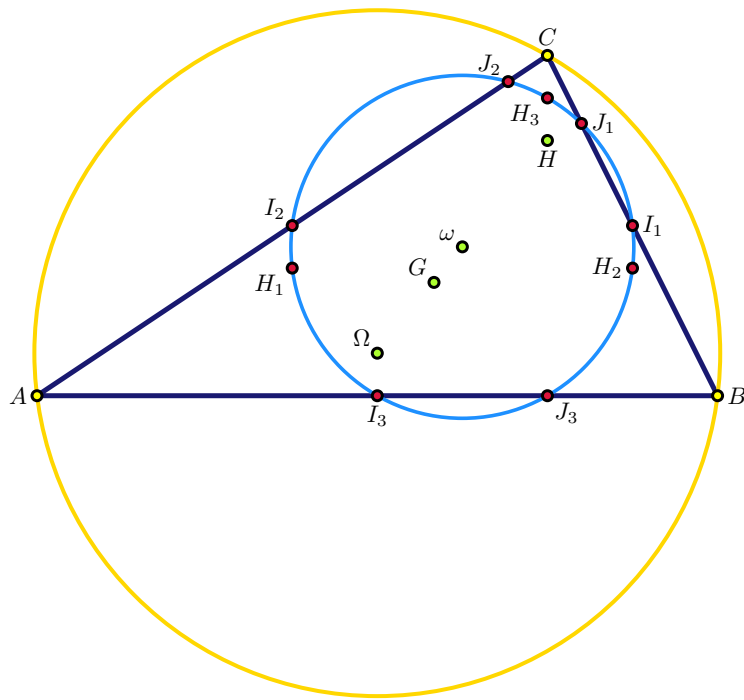
Finalement tout ce beau monde (9 points) reste sur le même cercle !

Et le centre de gravité dans tout cela ?

▷ `G:PointTriangle(T,"G");`

`point($\frac{7}{3}$, $\frac{2}{3}$)`

▷ `Figure('G');`



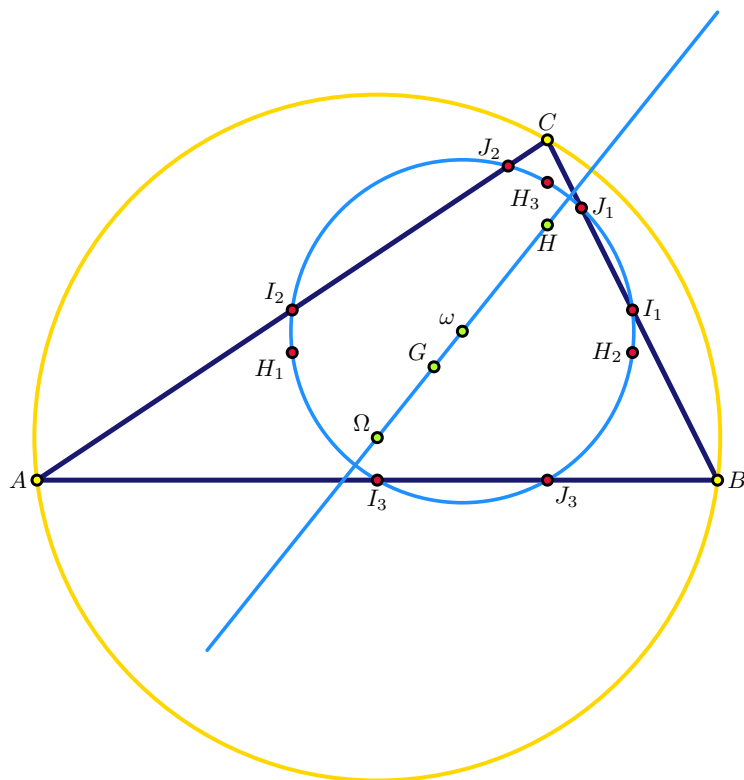
L'alignement se confirme !

Voici la droite d'EULER.

▷ d:Droite(Omega,H);

droite (point (2, $\frac{1}{4}$), point (3, $\frac{3}{2}$))

▷ Figure('d');



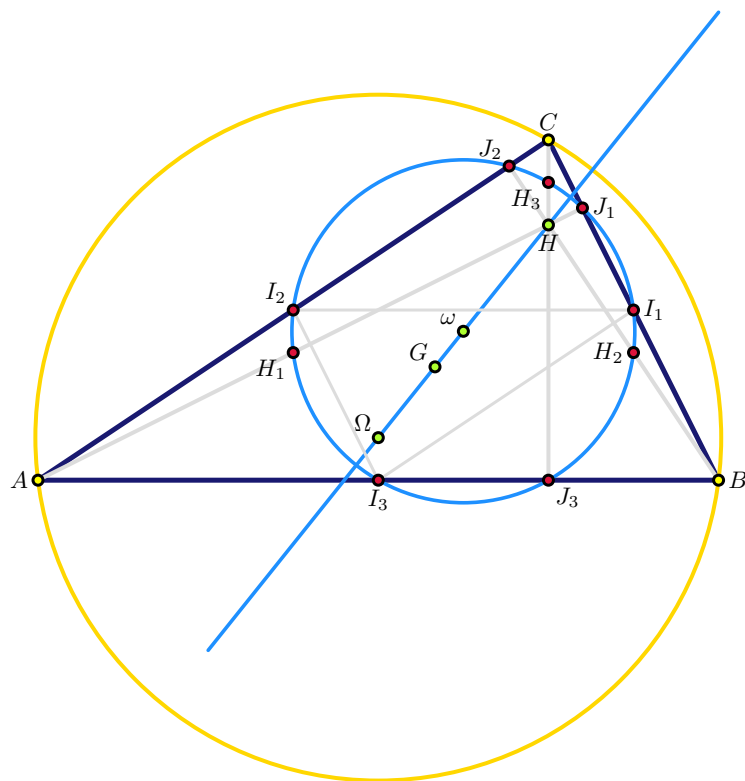
Quelques compléments..

▷ t1:Triangle(I1,I2,I3);

`triangle (point (7/2, 1), point (3/2, 1), point (2, 0))`

▷ `h:Hauteurs(T)$`

▷ `Figure('h','t1);`



Il reste encore beaucoup de propriétés à lire !

