**Sequence 6**

Start again with a new diagram: this time place point P on the circumcentre of triangle ABC and construct the pedal triangle. You may need to extend the sides of your triangle. This turns out to be a **pedal line.** Extend it. Hide everything except the triangle, point P, the circumcircle and the extended pedal line.

Now some fun begins. Click on the extended pedal line, choose a lightish colour (orange works well) from the palette with a thin width and find the ‘show trace’ option. Now move point P along the circumference of the circumcircle – keep moving – go round a few more times. You should find that you get a shaded area; this is called **Steiner’s hypocycloid** or **Steiner’s deltoid**

You might wonder how the **cusps** (pointy bits) of this figure relate to your original triangle or indeed to any other circles you might know about, particularly our new-to-some friend the nine-point circle of ABC. It’s a good thing to wonder about but discovery learning would not work perfectly here. The circle on which the cusps lie is concentric with the nine-point circle of ABC and has three times the radius. What is more the deltoid can be generated by rotating a circle around inside the outermost circle, and the generating circle is – guess what – congruent to the nine-point-circle of ABC.

**Convince**? See for yourself

Proof? Dick was enigmatic and merely referred to Cabri.

There are helpful animations offering other things to think about at: <http://www.matematicasvisuales.com/english/html/geometry/triangulos/steinernueve.html>

There are several proofs, some even described as ‘simple’. Like Dick I remain enigmatic.