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Hours: MWF 11:20 – 12:20 MW 1:40 – 2:40

1. Let E, F and G be the points where the excircles of $\triangle ABC$ touch sides a, b and c respectively. Show that AE, BF and CG are concurrent. The point of concurrency is called the Nagel point. Hint: express the lengths in Ceva's theorem with s, a, b, and c.

2. Show that the position vector of the incenter of $\triangle ABC$ is

$$\underline{j} = \frac{a\underline{a} + b\underline{b} + c\underline{c}}{a + b + c}.$$

Note that a, b, c are the lengths of the sides not the lengths of the position vectors.