Solution to Quizz VI
Math1060-02

Problem 1. (4 points) Use the information \( C = 43^\circ, \ a = \frac{4}{9}, \ b = \frac{7}{4} \) and the Law of Cosines to solve the triangle.

we have that
\[
c^2 = a^2 + b^2 - 2ab \cos C = \left(\frac{4}{9}\right)^2 + \left(\frac{7}{4}\right)^2 - 2 \cdot \frac{4}{9} \cdot \frac{7}{4} \cdot \cos 43^\circ = 2.122,
\]
so \( c = 1.456 \). Apply again the Law of Cosines to find the
\[
\cos A = \frac{b^2 + c^2 - a^2}{2bc} = 0.9782
\]
and thus \( A = 11.985^\circ \) and at the end \( B = 125.014^\circ \).

Problem 2. (4 points) Use Heron’s Area Formula to find the area of the triangle with \( a = 75.4, \ b = 52, \ c = 52 \). First \( p = \frac{a+b+c}{2} = \frac{179.5}{2} = 89.75 \). So \( p-a = 14.25 \) and \( p-b = p-c = 37.75 \) so that
\[
A = \sqrt{89.75 \times 14.25 \times 37.75 \times 37.75} = 1350.02
\]

Problem 3. (4 points) Find \( u + v, \ u - v, \ 2u - 3v \) if \( u = \langle 2, 3 \rangle \) and \( v = \langle 4, 0 \rangle \).

\[u + v = \langle 6, 3 \rangle,\]
\[u - v = \langle -2, 3 \rangle,\]
\[2u - 3v = \langle -8, 6 \rangle .\]