PROBLEM 1 – 20 points

(a) Three vectors have lengths of 6 m, 9 m, and 12 m, respectively. The vectors can be arranged in any orientation you want. When you add the three vectors, what is the ….:

[6 points] (i) largest magnitude possible you can achieve for the resultant vector? Draw a rough sketch to show how you would arrange the three vectors.

[6 points] (ii) smallest magnitude possible you can achieve for the resultant vector? Draw a rough sketch to show how you would arrange the three vectors.

[4 points] (b) Can you obtain resultant vectors with magnitudes covering the entire range between the maximum and minimum values above?

[ ] Yes [ ] No

Briefly justify your answer:

[4 points] (c) Whatever your answer to the previous question, could you add all three vectors together to get a resultant vector with a length of 12 m? If so, draw a rough sketch to show how you could do it. If not, explain why not.