

Grading Comments for TAM 202 HW#2, Feb 6, 2001

(a) 10 pts total (2.85 (1 pt) , 2.91 (1 pt)
2.93, 2.78, 5, 6 (2 pts each))

(b) Common errors:

(1) 2.93, the unit of lengths AB and BC is "cm" not "m" !
Also, $\hat{j} \times \hat{i} = -\hat{k}$ not \hat{k} !

(2) ~~2.93~~ 5, using cross product of \vec{OB} and $\hat{\lambda}_{AB}$ to calculate the shortest distance from AB to origin is correct, but the problem is asking for the coordinate of the closest pt! once d is found, $|\vec{BC}| = \sqrt{|\vec{OB}|^2 - d^2}$ since $|\vec{OB}|$ is calculated by coordinate of B. Coordinate of pt C can then be obtained by $\vec{OC} = \vec{OB} + \vec{BC}$ where $\vec{BC} = -\vec{CB} = -|\vec{BC}| \hat{\lambda}_{AB}$ (refer to figure in HW solution !)

(3) 6, HW solution has shown many ways to solve this problem. Using Geometry approach makes the calculation easier.

Using Normal vector method (method 3 in solution), one need to set up the proper coordinates for each pt (i.e., A, B and C) to find the vectors \vec{OA} and \vec{BC} . Most students tended to use this method but couldn't overcome the first step. Again, a clear picture will help you set up coordinates.

Once the coordinates of ~~each~~ pt A, B and C are obtained, the rest should be not difficult to do.