(ii)

$$\underset{\sim}{a} \times \underset{\sim}{b} = \begin{vmatrix} \hat{\underset{\sim}{i}} & \hat{\underset{\sim}{j}} & \hat{\underset{\sim}{k}} \\ 1 & 0 & 0 \\ 1 & 1 & 1 \end{vmatrix}$$

$$= \hat{\underset{\sim}{i}}(0-0) - \hat{\underset{\sim}{j}}(1-0) + \hat{\underset{\sim}{k}}(1-$$

$$= -\hat{\underset{\sim}{j}} + \hat{\underset{\sim}{k}}$$

$$|\underset{\sim}{a} \times \underset{\sim}{b}| = \sqrt{2}$$

$$\underset{\sim}{A_1} = \sqrt{2}(-\hat{\underset{\sim}{j}} + \hat{\underset{\sim}{k}}) = (0, -\sqrt{2}, \sqrt{2})$$

$$\underset{\sim}{b} \times \underset{\sim}{c} = \begin{vmatrix} \hat{\underset{\sim}{i}} & \hat{\underset{\sim}{j}} & \hat{\underset{\sim}{k}} \\ 1 & 1 & 1 \\ 0 & 2 & 0 \end{vmatrix}$$

two ways : • use xy, xg, yg planes

• use O A B O contour
      + O B C O contour

BUT need a GOOD drawing ☺

$$= \hat{\underset{\sim}{i}}(2-0) - \hat{\underset{\sim}{j}}(0-2) + \hat{\underset{\sim}{k}}(2-0)$$

$$= 2\hat{\underset{\sim}{i}} + 2\hat{\underset{\sim}{j}} + 2\hat{\underset{\sim}{k}}$$

$$\vec{S} = \begin{pmatrix} -1 \\ -1/2 \\ 3/2 \end{pmatrix}$$

$$A_2 = |\underset{\sim}{b} \times \underset{\sim}{c}| = \sqrt{4+4+4} = 2\sqrt{3}$$

$$\underset{\sim}{A_2} = 2\sqrt{3}(2,2,2) = (4\sqrt{3}, 4\sqrt{3}, 4\sqrt{3})$$

$$\underset{\sim}{S} = \underset{\sim}{A_1} + \underset{\sim}{A_2} = (4\sqrt{3}, 4\sqrt{3} - \sqrt{2}, 4\sqrt{3} + \sqrt{2})$$

This doesn't match part (i) and I'm not sure why... I also can't work out how to do the next two parts and the lecture