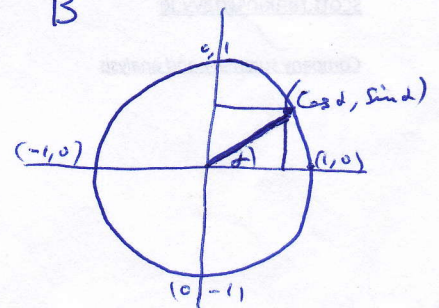
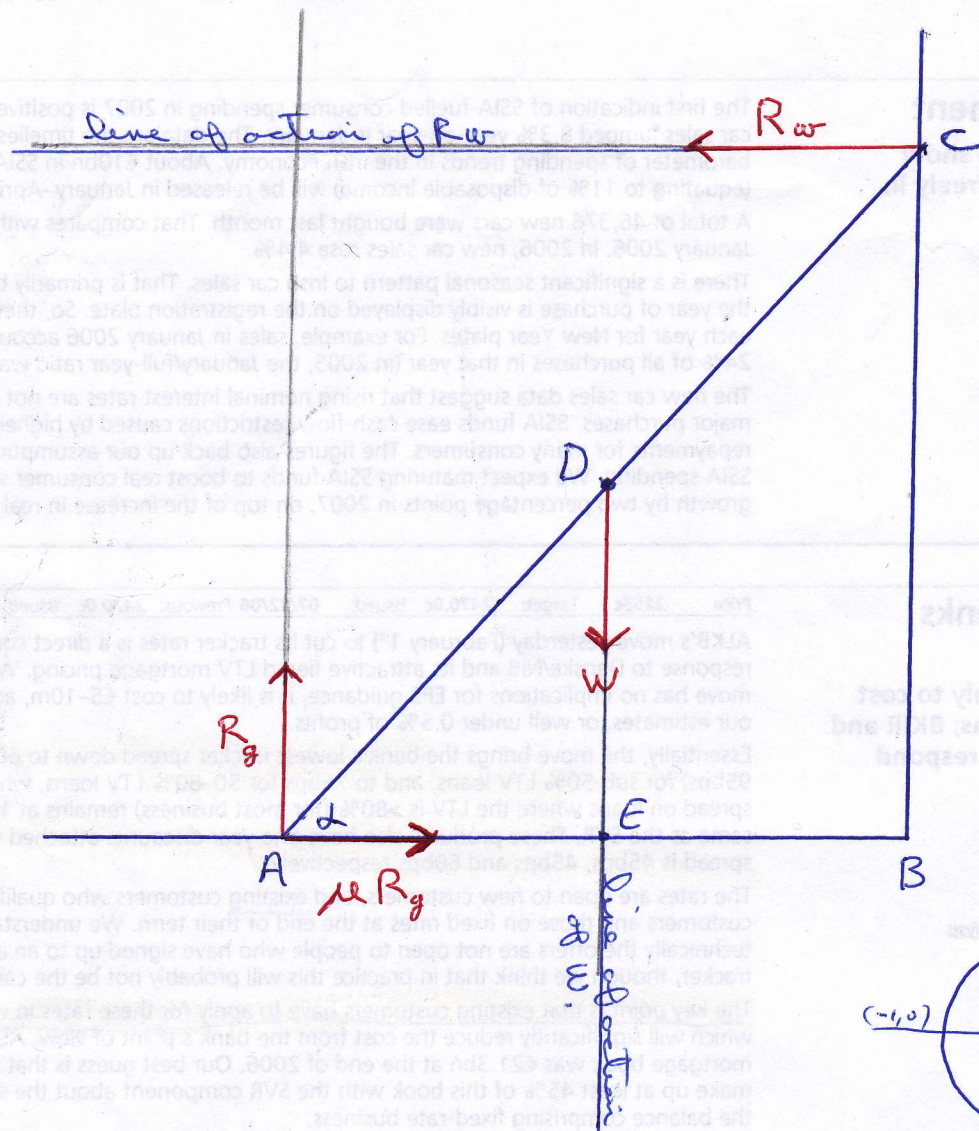


APPLIED MATHS ORDINARY Q7. (Ladder against wall)



Draw forces diagram

Balance forces: Horizontal: $\mu R_g = R_w$

vertical: $R_g = W.$

Take moments about A:

(Moment of a force (P) about a point, A, is the product of P and the perpendicular distance (d) from A to the line of action of P.)

$$M_A = P \times d.$$

$$\text{Moment at } C \text{ about A} = R_w \times |BC| = R_w \times |AC| \sin \alpha$$

$$\text{Moment at D about A} = W \times |AE| = W \times |AD| \cos \alpha.$$

At equilibrium: $R_w \times |AC| \sin \alpha = W \times |AD| \cos \alpha = W \times \frac{|AC|}{2} \cos \alpha$