

# HIGHER SUPPORTED STUDY : STRAIGHT LINES

① a)  $M_{AB} = 1$    b)  $M_{PQ} = \frac{3}{2}$    c)  $M_{RS} = -3$    d)  $M_{UV} = 0$   
 e)  $M_{MN} = \text{undefined}$    f)  $M_{EF} = \frac{3}{4}$

② a)  $m = \frac{3}{5}$    b)  $m = \frac{3}{2}$    c)  $m = -\frac{1}{2}$    d)  $m = \frac{4}{3}$    e)  $m = \frac{3}{2}$   
 f)  $m = \text{undefined}$

③ a)  $y = 2x + 3$    b)  $m = 1, y = x - 1$    c)  $2y = -x + 8$   
 d)  $m = \frac{3}{2}, 2y = 3x - 11$    e)  $m = \frac{1}{2}, 4y = 2x + 9$

④ a) 5 units   b) 10 units   c) 5 units   d) 13 units  
 e)  $\frac{1}{\sqrt{2}}$  units   f) 2 units

⑤ a)  $M_{PQ} \times M_{PR} = \frac{1}{5} \times (-5) \therefore \text{Right-angled @ P}$   
 $= -1$   
 b)  $M_{OE} \times M_{CE} = -\frac{2}{3} \times \frac{3}{2} \therefore \text{Right-angled @ E}$   
 $= -1$   
 c)  $M_{UV} \times M_{WV} = -\frac{7}{2} \times \frac{2}{7} \therefore \text{Right-angled @ V}$   
 $= -1$   
 d)  $M_{AB} \times M_{AC} = \frac{1}{2} \times (-2) \therefore \text{Right-angled @ A}$   
 $= -1$

⑥ a)  $\theta = \tan^{-1}(3) = 71.6^\circ$    b)  $\theta = \tan^{-1}(-\sqrt{3}) = 120.0^\circ$    c)  $\theta = \tan^{-1}(\frac{2}{3}) = 33.7^\circ$   
 d)  $\theta = \tan^{-1}(-\frac{4}{3}) = 126.9^\circ$    e)  $\theta = \tan^{-1}(1) = 45.0^\circ$    f)  $\theta = \tan^{-1}(-\frac{2}{5}) = 158.2^\circ$

⑦  $M_{AB} = -5 \therefore \angle ABC = \tan^{-1}(-5) = \underline{\underline{101^\circ}}$     $M_{AC} = -\frac{5}{9} \therefore \theta = \tan^{-1}(-\frac{5}{9}) = 151^\circ$   
 $\therefore \angle ACB = 180 - 151 = \underline{\underline{29^\circ}}$   
 $\angle BAC = 180 - (101 + 29) = \underline{\underline{50^\circ}}$

⑧ a)  $M_{AB} = 2$   
 $\therefore m_{PB} = -\frac{1}{2}$   
 mid =  $(1, 3)$   
 $\therefore \underline{2y = -x + 4}$

b)  $M_{CO} = -1$   
 $\therefore m_{PB} = 1$   
 mid =  $(1, 3)$   
 $\therefore \underline{y = x + 2}$

c)  $M_{JK} = -\frac{1}{2}$   
 $\therefore m_{PB} = 2$   
 mid =  $(-3, -\frac{1}{2})$   
 $\therefore \underline{2y = 4x + 5}$

d)  $M_{LM} = -\frac{1}{4}$   
 $\therefore m_{PB} = 4$   
 mid =  $(-5, -\frac{1}{2})$   
 $\therefore \underline{2y = 8x + 39}$

⑨ a) mid =  $(4, 3)$   
 $m = \frac{1}{2}$   
 $\therefore \underline{2y = x + 2}$

b) mid =  $(-1, 3)$   
 $m = -\frac{1}{3}$   
 $\therefore \underline{3y = -x + 8}$

c)  $\underline{(2, 2)}$

⑩ a) mid =  $(3, 4)$   
 $m = 0$   
 $\therefore \underline{y = 4}$

b)  $M_{QR} = \frac{1}{10}$   
 $\therefore M_{alt} = -10$   
 $\therefore \underline{y = -10x - 17}$

c)  $\underline{(-2, -1, 4)}$

⑪ MEDIAN mid =  $(3, 3)$   
 $m = 1$   
 $\therefore \underline{y = x}$

ALT  $M_{BC} = \frac{4}{11}$   
 $\therefore M_{alt} = -\frac{11}{4}$   
 $\therefore \underline{4y = -11x - 2}$

$\therefore \underline{(-\frac{2}{15}, -\frac{2}{15})}$