3. On the ellipse $4x^2+9y^2=1$, the points at which the tangents are parallel to the line $8x=9y$ are ***(1999 - 3 Marks)***

(a) $\left(\frac{2}{5},\frac{1}{5}\right)$ (b) $\left(-\frac{2}{5},\frac{1}{5}\right)$

(c) $\left(-\frac{2}{5},-\frac{1}{5}\right)$ (d) $\left(\frac{2}{5},-\frac{1}{5}\right)$

Solution: -

3. **(b,d)** Let $y=\frac{8}{9}x+C$ be the tangent to $\frac{x^2}{1/4}+\frac{y^2}{1/9}=1$

where $C=\pm\sqrt{a^2m^2+b^2}=\pm\sqrt{\frac{1}{4}\times\frac{64}{81}+\frac{1}{9}}=\pm\frac{5}{9}$

and pts of contact are $\left(\frac{-a^2m}{c},\frac{b^2}{c}\right)=\left(\frac{2}{5},\frac{-1}{5}\right)$

or $\left(\frac{-2}{5},\frac{1}{5}\right)$