8. If $x = 9$ is the chord of contact of the hyperbola $x^2 - y^2 = 9$, then the equation of the corresponding pair of tangents is

(1999 - 2 Marks)

(a) $9x^2 - 8y^2 + 18x - 9 = 0$ (b) $9x^2 - 8y^2 - 18x + 9 = 0$

(c) $9x^2 - 8y^2 - 18x - 9 = 0$ (d) $9x^2 - 8y^2 + 18x + 9 = 0$

Solution: -

8. **(b)** Chord $x = 9$ meets $x^2 - y^2 = 9$ at $(9, 6\sqrt{2})$ and $(9, -6\sqrt{2})$ at which tangents are

$$9x - 6\sqrt{2}y = 9 \text{ and } 9x + 6\sqrt{2}y = 9$$

or $3x - 2\sqrt{2}y - 3 = 0$ and $3x + 2\sqrt{2}y - 3 = 0$

$\therefore$ Combined equation of tangents is

$$(3x - 2\sqrt{2}y - 3)(3x + 2\sqrt{2}y - 3) = 0$$

or $9x^2 - 8y^2 - 18x + 9 = 0$