

$$r^2(7\cos^2\theta + 9) = 144 \quad \text{or}$$

$$7r^2\cos^2\theta + 9r^2 = 144$$

$$x = r\cos\theta, \quad r^2 = x^2 + y^2 \quad \text{or}$$

$$7x^2 + 9(x^2 + y^2) = 144$$

$$16x^2 + 9y^2 = 144$$

$$\frac{16x^2}{144} + \frac{9y^2}{144} = 1$$

$$\frac{x^2}{\left(\frac{12}{4}\right)^2} + \frac{y^2}{\left(\frac{12}{3}\right)^2} = 1$$

$$\frac{x^2}{3^2} + \frac{y^2}{4^2} = 1$$

$$\text{or } \boxed{\text{Ans: Ellipse } \frac{x^2}{3^2} + \frac{y^2}{4^2} = 1 \quad \text{center } (0,0)}$$

