

$$4x'^2 + 9y'^2 - \frac{8}{\sqrt{5}}x' - \frac{144}{\sqrt{5}}y' + 80 = 0,$$

выделим полные квадраты

$$4\left(x'^2 - \frac{2}{\sqrt{5}}x'\right) + 9\left(y'^2 - \frac{16}{\sqrt{5}}y'\right) + 80 = 0$$

$$4\left(x'^2 - \frac{2}{\sqrt{5}}x' + \frac{1}{5}\right) - \frac{4}{5} + 9\left(y'^2 - 2\frac{8}{\sqrt{5}}y' + \frac{64}{5}\right) - \frac{9 \cdot 64}{5} + 80 = 0$$

$$4\left(x' - \frac{1}{\sqrt{5}}\right)^2 + 9\left(y' - \frac{8}{\sqrt{5}}\right)^2 - \frac{580}{5} + 80 = 0$$

$$4\left(x' - \frac{1}{\sqrt{5}}\right)^2 + 9\left(y' - \frac{8}{\sqrt{5}}\right)^2 - 36 = 0, \text{ делим на } 36,$$

$$\frac{\left(x' - \frac{1}{\sqrt{5}}\right)^2}{9} + \frac{\left(y' - \frac{8}{\sqrt{5}}\right)^2}{4} = 1,$$

$$\begin{cases} x'' = x' - \frac{1}{\sqrt{5}}, \\ y'' = y' - \frac{8}{\sqrt{5}}. \end{cases}$$

$$\frac{x''^2}{9} + \frac{y''^2}{4} = 1 \text{ уравнение эллипса,}$$