

$$\begin{aligned} \sin y &= 3 \sin x \\ 2 \cos x + \cos y &= 1 \end{aligned}$$

$$\begin{aligned} \sin^2 y &= 9 \sin^2 x \\ \cos y &= 1 - 2 \cos x \\ \cos^2 y &= 1 - 4 \cos x + 4 \cos^2 x \\ \cos^2 y &= \sin^2 y + \cos^2 y - 4 \cos x + 4 \cos^2 x \\ -\sin^2 y &= -4 \cos x + 4 \cos^2 x \\ \sin^2 y &= 4 \cos x - 4 \cos^2 x \\ 9 \sin^2 x &= 4 \cos x - 4 \cos^2 x \\ 4 + 5 \sin^2 x - 4 \cos x &= 0 \\ 4 + 5 - 5 \cos^2 x - 4 \cos x &= 0 \\ a &= \cos x \\ b &= \cos y \\ 4 + 5 - 5a^2 - 4a &= 0 \\ 5a^2 + 4a - 9 &= 0 \\ D/4 &= 4 + 45 = 49 \\ a_1 &= (-2 + 7)/5 = 1 \\ a_2 &= (-2 - 7)/5 = -9/5 \\ b &= 1 - 2a \\ b_1 &= -1 \\ b_2 &= 23/5 \\ \cos x &= 1 \\ x &= 2\pi k \\ \cos x &= -9/5 \text{ - не правда} \\ \cos y &= -1 \\ y &= \pi + 2\pi k \\ \text{Ответ: } &(2\pi k; \pi + 2\pi k) \end{aligned}$$

$$\begin{aligned} \sin^2 y &= 9 \sin^2 x \\ \cos^2 y &= 1 - 4 \cos x + 4 \cos^2 x \end{aligned}$$

$$\sin^2 y + \cos^2 y = 1$$

$$9 \sin^2 x + 1 - 4 \cos x + 4 \cos^2 x = 1$$