

$$\sin x = \sin y$$
$$\cos x = \sin 2y$$

$$\sin^2 x = \sin^2 y$$
$$\cos^2 x = \sin^2(2y)$$

$$1 - \sin^2 x = \sin^2(2y)$$

$$1 - \sin^2 y = \sin^2(2y)$$

$$1 + \operatorname{tg}^2 y - \operatorname{tg}^2 2y = \sin^2(2y)$$
$$1 = \sin^2(2y) / \cos^2(y)$$
$$\cos^2(y) = \sin^2(2y)$$
$$\sin^2(2y) - \cos^2(y) = 0$$
$$(\sin(2y) + \cos y)(\sin 2y - \cos y) = 0$$

$$\sin(2y) + \cos y = 0$$
$$2\sin y \cos y + \cos y = 0$$
$$\cos y(2\sin y + 1) = 0$$
$$\cos y = 0$$
$$y = \pi/2 + \pi k$$
$$y = \pi/2 + 2\pi k$$
$$x = \pi/2 + 2\pi k$$
$$y = 3\pi/2 + 2\pi k$$
$$x = 3\pi/2 + 2\pi k$$

$$2\sin y + 1 = 0$$
$$2\sin y = -1$$
$$\sin y = -1/2$$
$$y = 11\pi/6 + 2\pi k = x$$
$$y = 7\pi/6 + 2\pi k = x$$

$$(\sin 2y - \cos y) = 0$$
$$\cos y(2\sin y - 1) = 0$$
$$\sin y = 1/2$$
$$y = \pi/6 + 2\pi k = x$$
$$y = 5\pi/6 + 2\pi k = x$$

Ответ:  $(\pi/6 + 2\pi k; \pi/6 + 2\pi k); (5\pi/6 + 2\pi k; 5\pi/6 + 2\pi k); (11\pi/6 + 2\pi k; 11\pi/6 + 2\pi k); (7\pi/6 + 2\pi k; 7\pi/6 + 2\pi k); (\pi/2 + 2\pi k; \pi/2 + 2\pi k); (3\pi/2 + 2\pi k; 3\pi/2 + 2\pi k)$