

$$\cos x \cdot \cos 2x \cdot \cos 3x \leq 0$$

$$\frac{1}{2}(\cos 4x + \cos 2x) \cdot \cos 2x \leq 0$$

$$\frac{1}{2}(2\cos^2 2x + \cos 2x - 1) \cdot \cos 2x \leq 0$$

$$\cos 2x = t$$

$$(2t^2 + t - 1)t \leq 0$$

$$t = 0$$

$$2t^2 + t - 1 = 0$$

$$D = 1 + 8 = 9$$

$$x_1 = \frac{-1 + 3}{4} = \frac{1}{2}$$

$$x_2 = \frac{-1 - 3}{4} = -1$$

$$t \in (-\infty; -1] \cup [0; \frac{1}{2}]$$

$$\cos 2x = -1$$

$$2x = \pi + 2\pi k$$

$$x = \frac{\pi}{2} + \pi k$$

$$\frac{\pi}{3} + 2\pi k < 2x \leq \frac{\pi}{2} + \pi k$$

$$\frac{\pi}{6} + \pi k < x \leq \frac{\pi}{4} + \frac{\pi k}{2}$$

$$\frac{3\pi}{2} + 2\pi k < 2x \leq \frac{5\pi}{3} + 2\pi k$$

$$\frac{3\pi}{4} + \pi k < x \leq \frac{5\pi}{6} + \pi k$$

$$\text{Ответ: } x = \frac{\pi}{2} + \pi k; \frac{3\pi}{4} + \pi k < x \leq \frac{5\pi}{6} + \pi k;$$

$$\frac{\pi}{6} + \pi k < x \leq \frac{\pi}{4} + \frac{\pi k}{2}$$

