Zadatak 13. Ako je $\cos x = \frac{1}{7}$, $\cos(x+y) = -\frac{11}{14}$, $0 < x < \frac{\pi}{2}$, $0 < y < \frac{\pi}{2}$, izračunaj $\cos y$.

Rješenje. x, y iz I. kvadranta $\Longrightarrow$ $\cos x,\ \sin x,\ \cos y,\ \sin y > 0$;

$$\sin x = \frac{4\sqrt{3}}{7}$$

$$\cos x = \sqrt{1-\sin^2 x} = \sqrt{1-\frac{1}{49}} = \sqrt{\frac{48}{49}} = \frac{4\sqrt{3}}{7}$$

$$\cos(x+y) = \cos x\cos y - \sin x\sin y = -\frac{11}{14}$$

$$(1) \qquad \frac{1}{7}\cos y - \frac{4\sqrt{3}}{7}\sin y = -\frac{11}{14}$$

$$\sin(x+y) = \sqrt{1-\cos^2(x+y)} = \sqrt{1-\frac{121}{196}} = \sqrt{\frac{75}{196}} = \frac{5\sqrt{3}}{14}$$

$$\sin(x+y) = \sin x\cos y + \cos x\sin y = \frac{5\sqrt{3}}{14}$$

$$(2) \qquad \frac{4\sqrt{3}}{7}\cos y + \frac{1}{7}\sin y = \frac{5\sqrt{3}}{14}$$

Iz (1) i (2) imamo:

$$\frac{1}{7}\cos y - \frac{4\sqrt{3}}{7}\sin y = -\frac{11}{14} \quad \Big/ \cdot 14$$

$$\frac{4\sqrt{3}}{7}\cos y + \frac{1}{7}\sin y = \frac{5\sqrt{3}}{14} \quad \Big/ \cdot 14$$

$$2\cos y - 8\sqrt{3}\sin y = -11$$

$$8\sqrt{3}\cos y + 2\sin y = 5\sqrt{3} \quad / \cdot 4\sqrt{3}$$

$$\left.\begin{aligned} 2\cos y - 8\sqrt{3}\sin y &= -11 \\ 96\cos y + 8\sqrt{3}\sin y &= 60 \end{aligned}\right\} +$$

$$98\cos y = 49$$

$$\cos y = \frac{49}{98} = \frac{1}{2};$$