Zadatak 4. Odredi:

1) $\int 3\sin 2x\,dx$; **2)** $\int (\sin x+\cos 2x)dx$;

3) $\int \cos 5x\cos 3x\,dx$; **4)** $\int 2\sin x\cos 3x\,dx$;

5) $\int \sin^2 x\,dx$; **6)** $\int \cos^2 x\,dx$;

7) $\int (1-2\cos^2\frac{x}{2})dx$; **8)** $\int \sin^2(2x-\pi)dx$.

Rješenje. **1)** $\int 3\sin 2x\,dx = 3\int \sin 2x\,dx = -\frac{3}{2}\cos 2x + C$;

2) $\int (\sin x+\cos 2x)dx = -\cos x + \frac{1}{2}\sin 2x + C$;

3) $\int \cos 5x\cos 3x\,dx = \int \frac{1}{2}[\cos 2x+\cos 8x]dx = \frac{1}{4}\int 2\cos 2x\,dx + \frac{1}{16}\int 8\cos 8x\,dx$
$= \frac{1}{4}\sin 2x + \frac{1}{16}\sin 8x + C$;

4) $\int 2\sin x\cos 3x\,dx = \int 2\frac{1}{2}(\sin(-2x)+\sin 4x)dx = -\frac{1}{2}\int 2\sin 2x\,dx + \frac{1}{4}\int 4\sin 4x\,dx$
$= \frac{1}{2}\cos 2x - \frac{1}{4}\cos 4x + C$;

5) $\int \sin^2 x\,dx = \int \frac{1}{2}(1-\cos 2x)dx = \frac{1}{2}\int dx - \frac{1}{4}\int 2\cos 2x\,dx$
$= \frac{1}{2}x - \frac{1}{4}\sin 2x + C$;

6) $\int \cos^2 x\,dx = \int \frac{1}{2}(1+\cos 2x)dx = \frac{1}{2}\int dx + \frac{1}{4}\int 2\cos 2x\,dx$
$= \frac{1}{2}x + \frac{1}{4}\sin 2x + C$;

7) $\int (1-2\cos^2\frac{x}{2})dx = \int (-\cos x)dx = -\sin x + C$;

8) $\int \sin^2(2x-\pi)dx = \int \frac{1}{2}(1-\cos(4x-2\pi))dx = \frac{1}{2}\int (1-\cos 4x)dx =$
$\frac{1}{2}\int dx - \frac{1}{8}\int 4\cos 4x = \frac{1}{2}x - \frac{1}{8}\sin 4x + C$.