Дом по задаче 7.6

$f(x) = x^2$; ряд Фурье по $\cos x \in [-2; 0]$

$$\frac{2}{2}\int_{-2}^{0} x^2 \cos \pi n x \, dx = \frac{4}{\pi^2 n^2}$$

$$\frac{2}{2}\int_{-2}^{0} x^2 \sin \pi n x \, dx = \frac{4}{\pi n}$$

$$\int_{-2}^{0} (x^2) dx = 2 + \frac{1}{3}$$

$$\frac{2 + \frac{1}{3}}{2} = 1 + \frac{1}{3}$$

$$\sum_{n=1}^{\infty} \frac{4 \cos \pi n x}{\pi^2 n^2} + \sum_{n=1}^{\infty} \frac{4 \sin \pi n x}{\pi n} + \left(1 + \frac{1}{3}\right)$$

$$\to 1 + \frac{4 \sum_{n=1}^{\infty} \frac{\sin \pi n x}{n}}{\pi} + \frac{4 \sum_{n=1}^{\infty} \frac{\cos \pi n x}{n^2}}{\pi^2} + \frac{1}{3}$$