$$a_n = 2\int_0^1 (2+x)\cos \pi n x \, dx = \left| \begin{array}{l} u = 2+x, \\ du = 1dx, \\ dv = \cos \pi n x \, dx, \\ v = \frac{\sin \pi n x}{\pi n} \end{array} \right| =$$

$$= (2+x)\cdot \frac{\sin \pi n x}{\pi n} - \int \frac{\sin \pi n x}{\pi n} dx =$$

$$= (2+x)\cdot \frac{\sin \pi n x}{\pi n} - \frac{1}{\pi^2 n^2}\cdot(\cos(\pi n x))\Big|_0^1 =$$

$$= 2\cdot \frac{(-1)^n - 1}{\pi^2 n^2}$$

$$f(x) = \frac{5}{2} + \sum_{n=1}^{\infty} \frac{2}{\pi^2 n^2}((-1)^n - 1)\cos \pi n x$$

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