MATH 54 SUMMER 2017, QUIZ 23

Find the projection of $\sin(x)$ on the subspace $\text{span}\{1, x\}$ in the inner product space $C([0, \pi])$ with the inner product given below.

$$\langle f, g \rangle = \int_0^\pi f(x)g(x)\,dx$$

Warning: with the inner product above, $\{1, x\}$ is *not* an orthogonal set!

[Hint: $\int_0^\pi \sin(x)\,dx = 2$ and $\int_0^\pi x\sin(x)\,dx = \pi$.]

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