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Homework #6

MATH 440
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1.

Let $C[0,1]$ denote the set of all continuous functions with domain $[0,1]$ and codomain $\mathbb{R}$. Recall that $C[0,1]$ is an inner product space with the inner product defined on the top of page 53 in the workbook, and the norm defined at the bottom of page 55 in the workbook. For the remainder of this problem, let $f(x) = x^2$ and $g(x) = x^3$. *Solution:*

$$\begin{aligned} < f, g > &= \int_0^1 x^2 \; x^3 \; dx \\ &= \int_0^1 x^5 \; dx \\ &= \frac{x^6}{6} \end{aligned}$$