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MA 26500-215 Quiz 9

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1. Let $\mathcal{P}_2(\mathbb{R})$ be the set of all polynomials of degree less than or equal to 2. We define an inner product on $\mathcal{P}_2(\mathbb{R})$ by

$$\langle p(t), q(t) \rangle = \int_0^1 p(t)q(t)\,\mathrm{d}t$$

for polynomials $p(t), q(t) \in \mathcal{P}_2(\mathbb{R})$.

   (a) (8 points) The set {} is a basis for $\mathcal{P}_2(\mathbb{R})$. Use the Gram–Schmidt process to find an orthonormal basis for $\mathcal{P}_2(\mathbb{R})$.

   (b)

2.