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4. Motivation for Kernels: Computational Efficiency

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Exercises due Mar 8, 2023 08:59 -03 Completed

Motivation for Kernels: Computational Efficiency**Video**
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Kernels as Dot Products 1

1/1 point (graded)

Let us go through the computation in the video above. Assume we map \mathbf{x} and $\mathbf{x}' \in \mathbb{R}^2$ to $\phi(\mathbf{x})$ and $\phi(\mathbf{x}')$ given by

$$\phi(\mathbf{x}) = [x_1, x_2, x_1^2, \sqrt{2}x_1x_2, x_2^2]$$

$$\phi(\mathbf{x}') = [x'_1, x'_2, x'^2_1, \sqrt{2}x'_1x'_2, x'^2_2].$$

Which of the following equals the dot product $\phi(\mathbf{x}) \cdot \phi(\mathbf{x}')$?

☐ $\mathbf{x} \cdot \mathbf{x}'$
☒ $\mathbf{x} \cdot \mathbf{x}' + (\mathbf{x} \cdot \mathbf{x}')^2$

1/1 point (graded)

Which of the following feature vectors produces the kernel

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