

$$\begin{aligned}
 5. \text{ Find } \int_0^{\pi/2} \int_0^1 x \sin xy \, dy \, dx &= \int_0^{\pi/2} \left[-\cos xy \right]_0^1 dx = \int_0^{\pi/2} -\cos x + 1 \, dx \\
 &= -\sin x + x \Big|_0^{\pi/2} = -1 + \frac{\pi}{2} = \left(\frac{\pi}{2} - 1 \right)
 \end{aligned}$$

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This is 16.2/7

$$\begin{aligned}
 6. \text{ Find } \int_{1/2}^1 \int_0^{2x} \cos(\pi x^2) \, dy \, dx &= \int_{1/2}^1 y \cos(\pi x^2) \Big|_0^{2x} dx \\
 &= \int_{1/2}^1 2x \cos(\pi x^2) \, dx = \left[\frac{\sin(\pi x^2)}{\pi} \right]_{1/2}^1 = \frac{1}{\pi} \left(0 - \frac{\sqrt{2}}{2} \right) = \left(\frac{-\sqrt{2}}{2\pi} \right)
 \end{aligned}$$

This is 16.3/7.