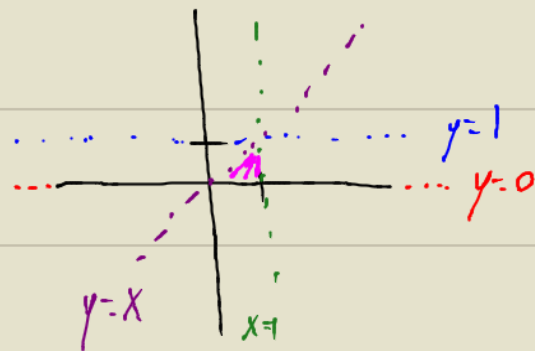


$$16. \int_{y=0}^{y=1} \int_{x=y}^{x=1} \cos(x^2) dx dy$$

$$= \int_{x=0}^{x=1} \int_{y=0}^{y=x} \cos(x^2) dy dx$$



$$= \int_{x=0}^{x=1} [y \cos(x^2)]_{y=0}^{y=x} dx$$

$$= \int_{x=0}^{x=1} [x \cos(x^2) - 0 \cos(x^2)] dx$$

$$= \int_{x=0}^{x=1} [x \cos(x^2)] dx$$

$$u = x^2 \quad du = 2x dx$$

$$= \frac{1}{2} \int_{x=0}^{x=1} [2x \cos(x^2)] dx$$

$$= \frac{1}{2} \int_{x=0}^{x=1} \cos u du$$

$$= \frac{1}{2} [\sin u]_{x=0}^{x=1}$$

$$= \frac{1}{2} [\sin x^2]_{x=0}^{x=1}$$

$$= \frac{1}{2} [\sin 1^2 - \sin 0^2]$$

$$= \frac{1}{2} [\sin 1 - \sin 0]$$

$$= \frac{1}{2} [\sin 1 - 0]$$

$$= \frac{1}{2} \sin 1$$

