

#5. Calculate $\int_{-2}^2 \int_{y^2}^4 y \sin(x^2) dx dy$

change order of integration

$$\int_0^4 \int_{-\sqrt{x}}^{\sqrt{x}} y \sin(x^2) dy dx$$

$$\int_0^4 \sin(x^2) \left. \frac{y^2}{2} \right|_{-\sqrt{x}}^{\sqrt{x}} dx$$

$$\int_0^4 \sin(x^2) \left(\frac{x}{2} - \frac{x}{2} \right) dx$$

$$= 0$$

