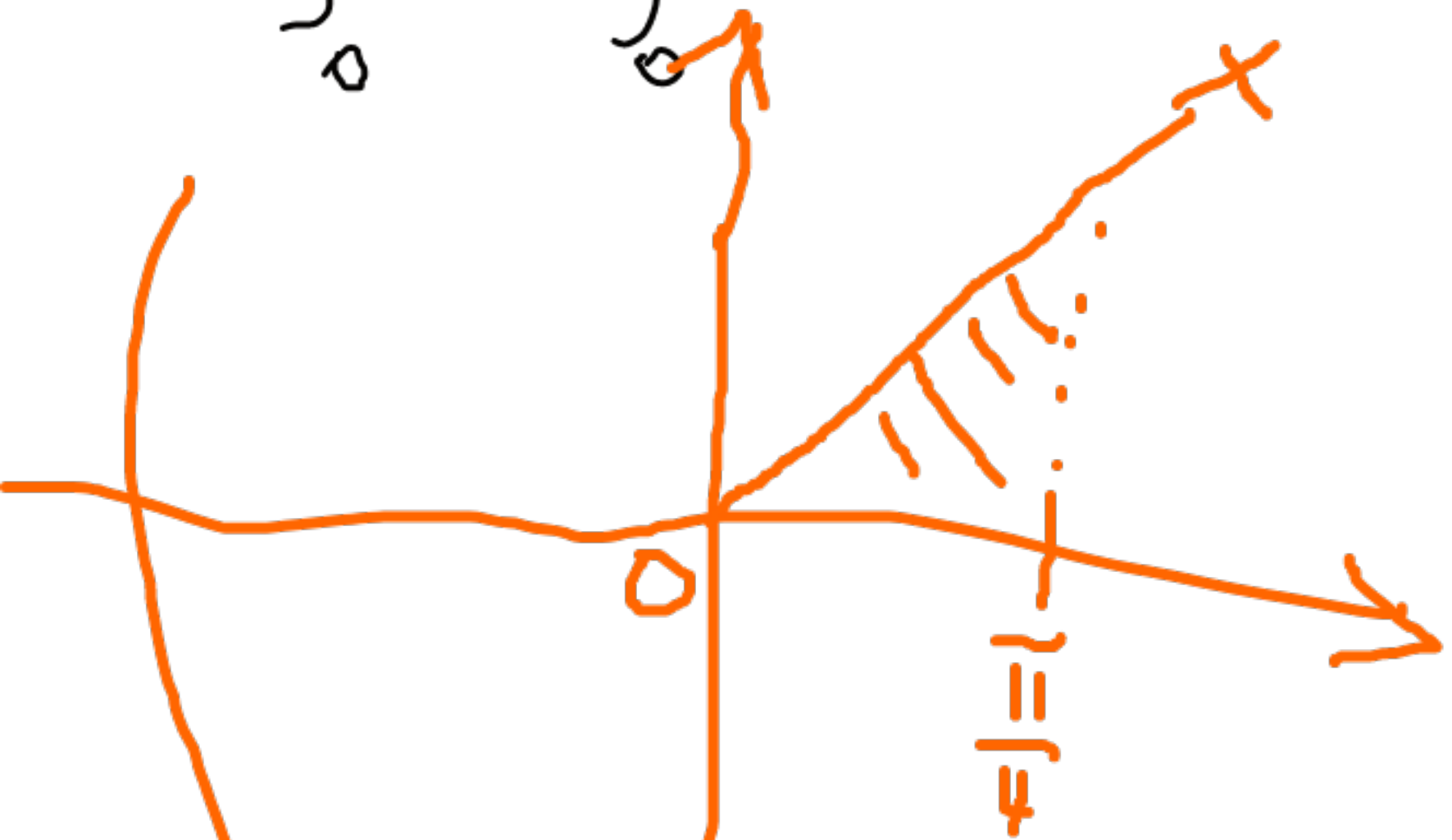


$$\int_0^{\frac{\pi}{4}} dx \int_0^x \sin(x+y) dy = \int$$



$$\int_0^x \sin(x+y) dy = \left[-\cos(x+y) \right]_{y=0}^{y=x}$$

$$= -\cos(2x) + \cos x$$

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$$\int_0^{\frac{\pi}{4}} (-\cos 2x + \cos x) dx = \left[-\frac{\sin 2x}{2} + \sin x \right]_0^{\frac{\pi}{4}}$$

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$$= -\frac{\sin \frac{\pi}{2}}{2} + \frac{\sin 0}{2} + \sin \frac{\pi}{4} - \sin 0 =$$

$$= -\frac{1}{2} + \frac{\sqrt{2}}{2}$$