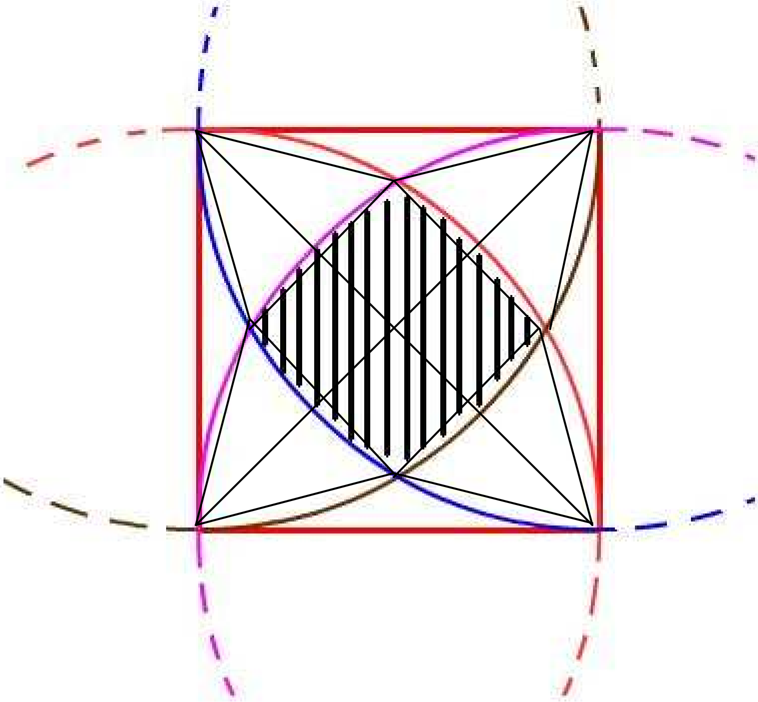


$$Area\ of\ a\ circle = \int_0^{2\pi} d\theta \int_0^{r} r dr = (2\pi)\left(\frac{r^2}{2}\right) = \pi r^2$$

$$Area\ of\ each\ circle = \ \pi r^2$$

$$Area\ of\ each\ circle = \pi(1^2) = \pi$$

$$Area\ of\ whole\ square = 1 \times 1 = 1$$

$The\ circles\ are\ each\ cut\ into\ \frac{1}{4}\ by\ the\ intersection\ with\ the\ square.$

$$Area\ of\ \frac{1}{4}\ of\ the\ circle = \frac{\pi}{4}$$

$$Area\ of\ square\ when\ \frac{1}{4}\ circle\ removed = 1 - \frac{\pi}{4} = \frac{4-\pi}{4}$$

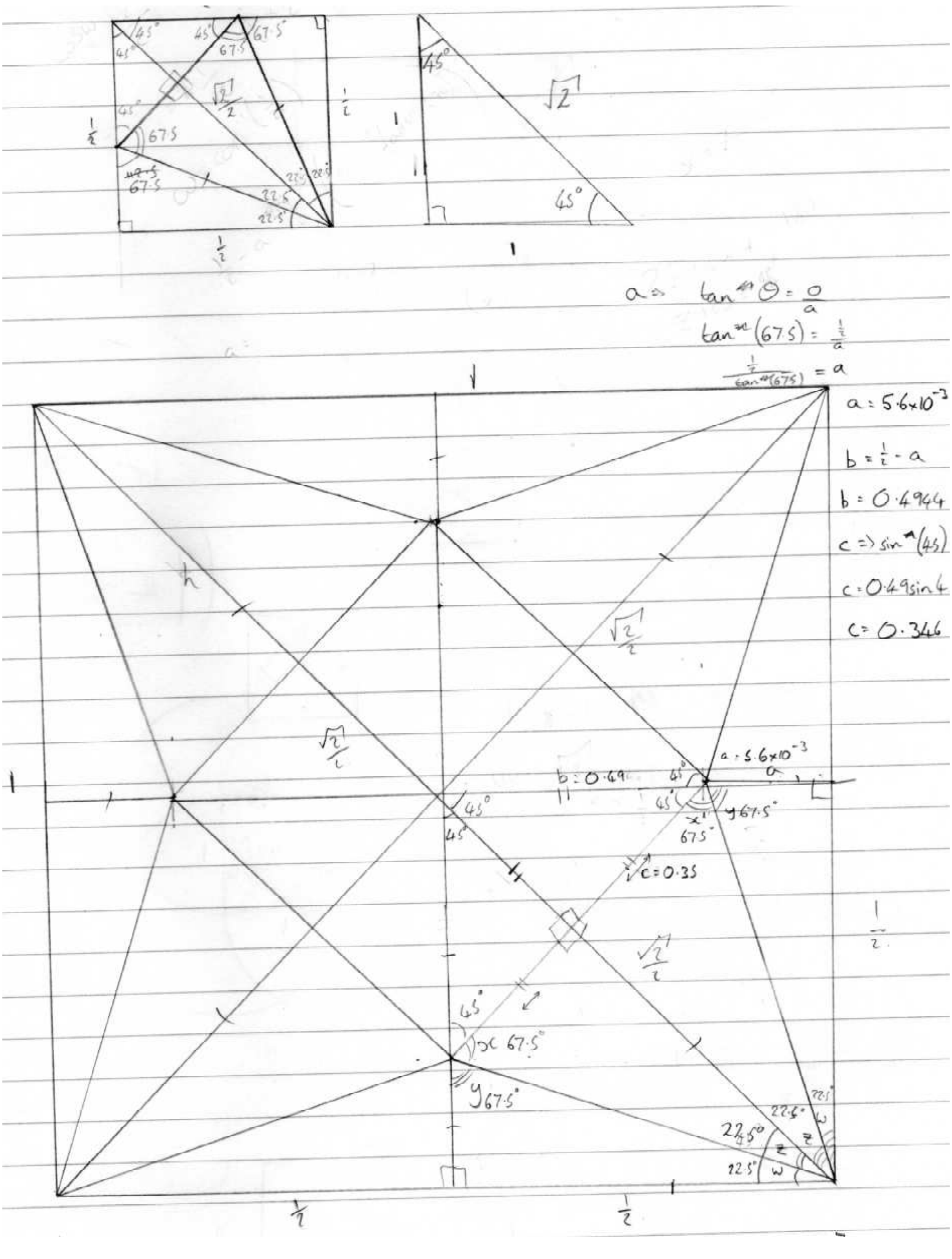
$$Area_{shaded}\ = 1 - [4\left(\frac{4-\pi}{4}\right)]$$

$$Area_{shaded} = 1 - \left(\frac{16-4\pi}{4}\right)$$

$$Area_{shaded} = 1 - 4 + \pi$$

$$Area_{shaded} = -3 + \pi$$

$$Area_{shaded} = \pi - 3$$



$$Largest\ square\ possible = (0.35)^2 = 0.1225$$

$$Error\ margin = 100 - \left[\frac{0.1225}{(-3+\pi)} \times 100\right] = 13.5\%$$