HW-1

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Problem - 1

a

$$N = \frac{\pi {w_r}^2}{{d_e}^2} - \frac{2\pi w_r}{\sqrt{2} d_e} = \pi(\frac{w_r}{d_e})^2 - \sqrt{2}\pi\frac{w_r}{d_e} = \pi\frac{w_r}{d_e}(\frac{w_r}{d_e} - \sqrt{2}) \tag{1}$$

Where N is the number of useful dies on the wafer in terms of w_r and d_e.

b

With result from a, it is clear that $N > 0$. Thus $\frac{w_r}{d_e} > \sqrt{2}$.

c

Let $R_{wd} = \frac{w_r}{d_e}$. Thus

$$N = \pi R_{wd}(R_{wd} - \sqrt{2}) \tag{2}$$

d

As die yield formula is not allowed to use in HW-1.

$$Y = N(1 - de^2 \times D_d) \tag{3}$$

Problem - 2