5-1. naloga: **izračunajte integral**

$$I_n = \int_{xs}^{xz} \frac{x^n}{x+5} dx \quad , \quad 0 \le n \le 20$$

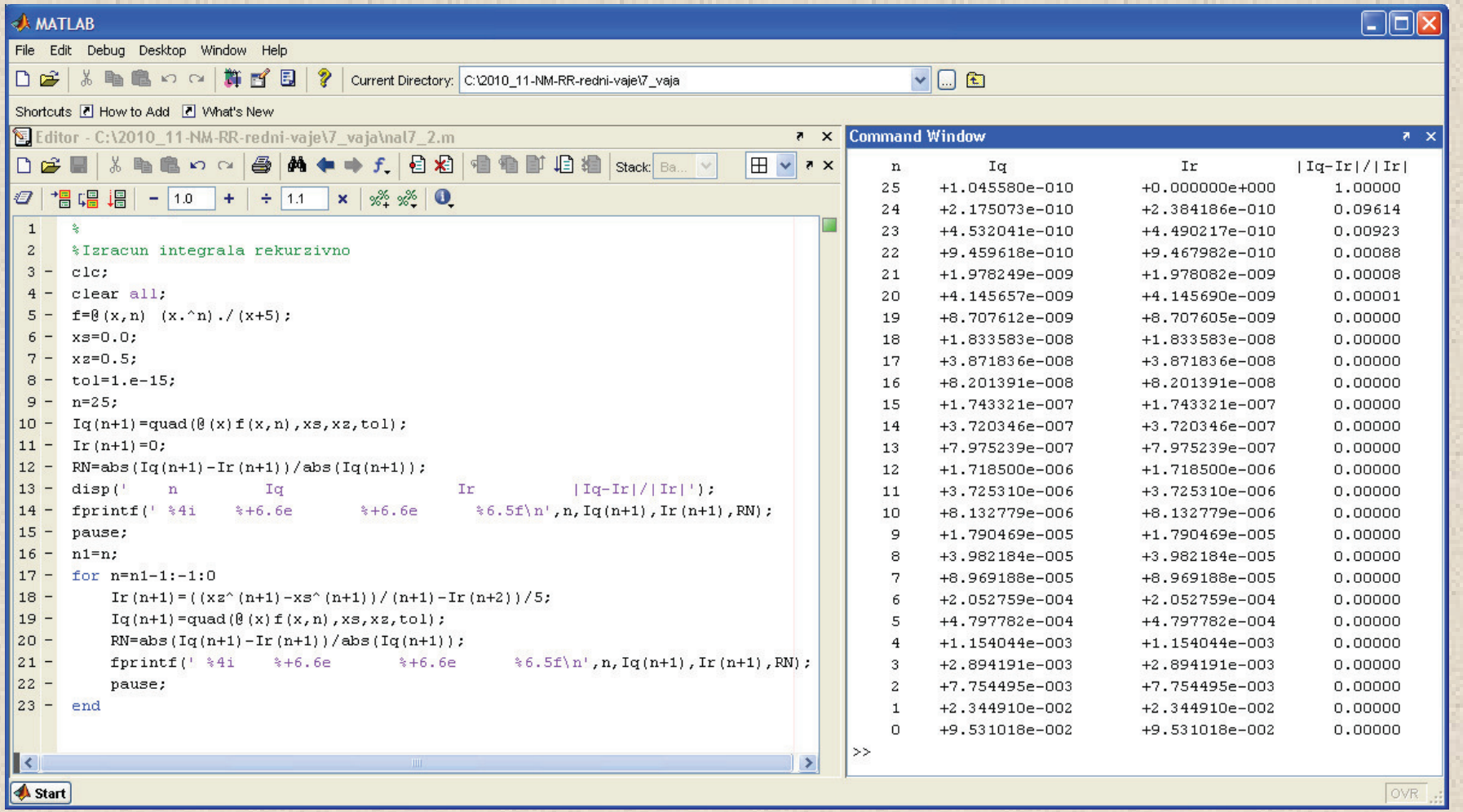
z rekurzivno formulo

$$I_n = \frac{1}{5}\left(\frac{xz^n - xs^n}{n} - I_{n+1} \right)$$

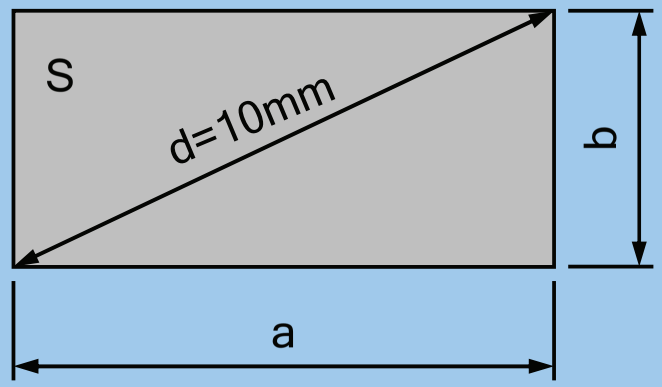
ter izračunajte relativno napako glede na z Matlab-ovo funkcijo *quad* izračunanim integralom

$$\varepsilon_{RN} = \frac{\left| I_n^{quad} - I_n \right|}{\left| I_n^{quad} \right|}$$

5-1. naloga: izračunajte integral z rekurzivno formulo



5-2. naloga: **ob znani ploščini *S* in diagonali *d* pravokotnika izračunajte stranici *a* in *b* pravokotnika**



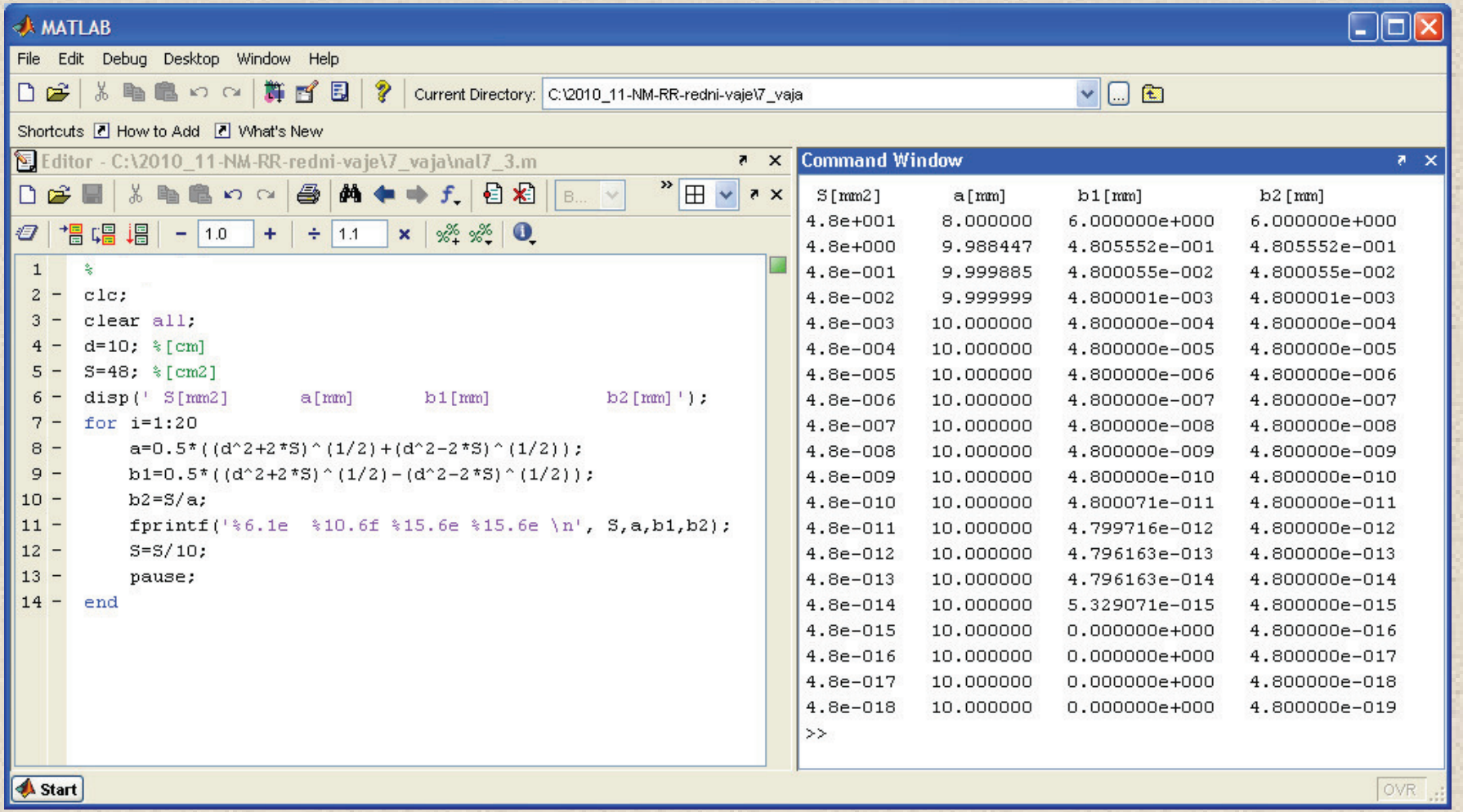
$$S_1 = 48mm^2 \ , \quad S_{n+1} = \frac{S_n}{10} \ , 1 \le n \le 20$$

$$a_n = \frac{1}{2}\left[\sqrt{\left(d^2 + 2S_n\right)} + \sqrt{\left(d^2 - 2S_n\right)}\right]$$

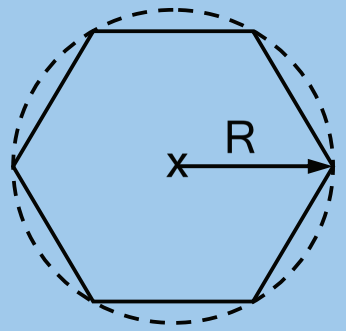
$$b_{1n} = \frac{1}{2}\left[\sqrt{\left(d^2 + 2S_n\right)} - \sqrt{\left(d^2 - 2S_n\right)}\right]$$

$$b_{2n} = \frac{S_n}{a_n}$$

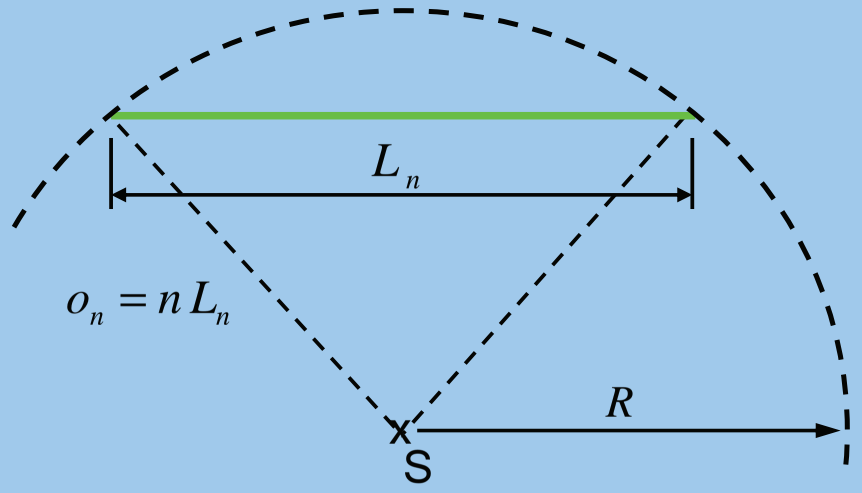
5-2. naloga: ob znani ploščini S in diagonali d pravokotnika izračunajte stranici a in b pravokotnika



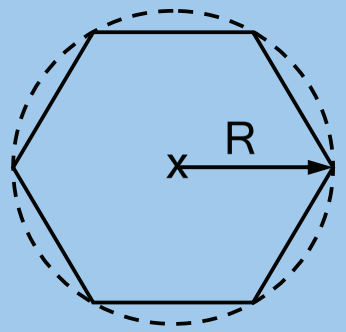
5-3. naloga: **izračunajte število ¶**



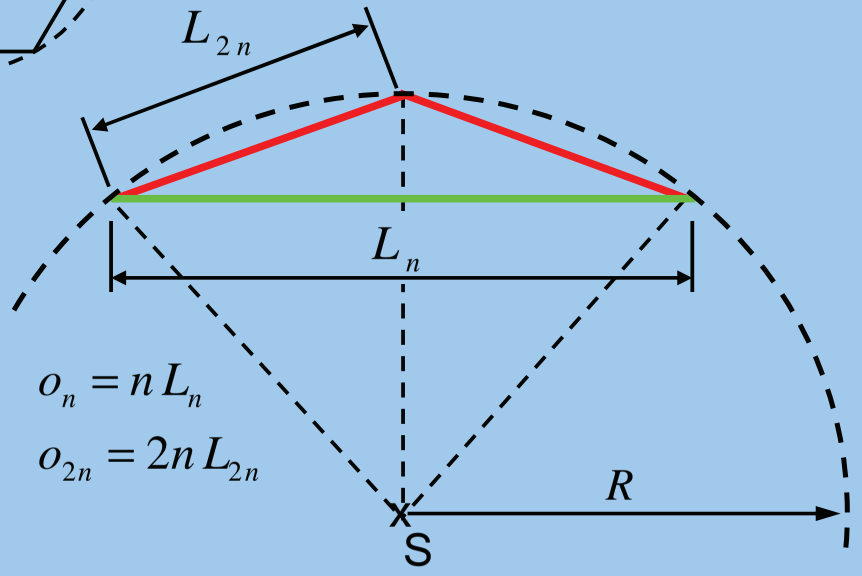
$$o_{krog} = 2\pi R \rightarrow \pi = \frac{o_{krog}}{2R} \approx \frac{o_n}{2R}$$



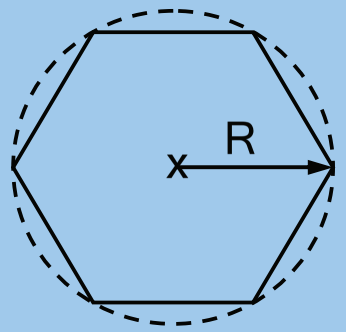
5-3. naloga: **izračunajte število ¶**



$$o_{krog} = 2\pi R \rightarrow \pi = \frac{o_{krog}}{2R} \approx \frac{o_n}{2R}$$

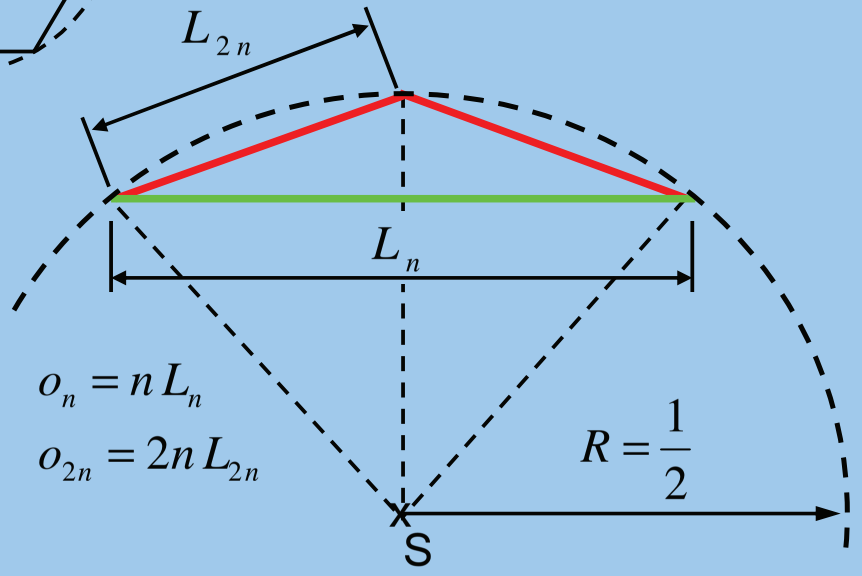


5-3. naloga: **izračunajte število ¶**



$$o_{krog} = 2\pi R \rightarrow \pi = \frac{o_{krog}}{2R} \approx \frac{o_n}{2R}$$

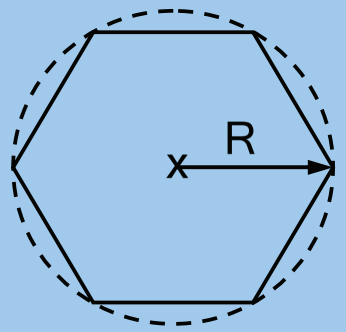
$$R = \frac{1}{2} \Rightarrow \pi \approx o_n$$



$$L_{2n} = \sqrt{\left(\frac{L_n}{2}\right)^2 + \left(R - \sqrt{R^2 - \left(\frac{L_n}{2}\right)^2}\right)^2} = \sqrt{2R^2 - 2R\sqrt{R^2 - \left(\frac{L_n}{2}\right)^2}}$$

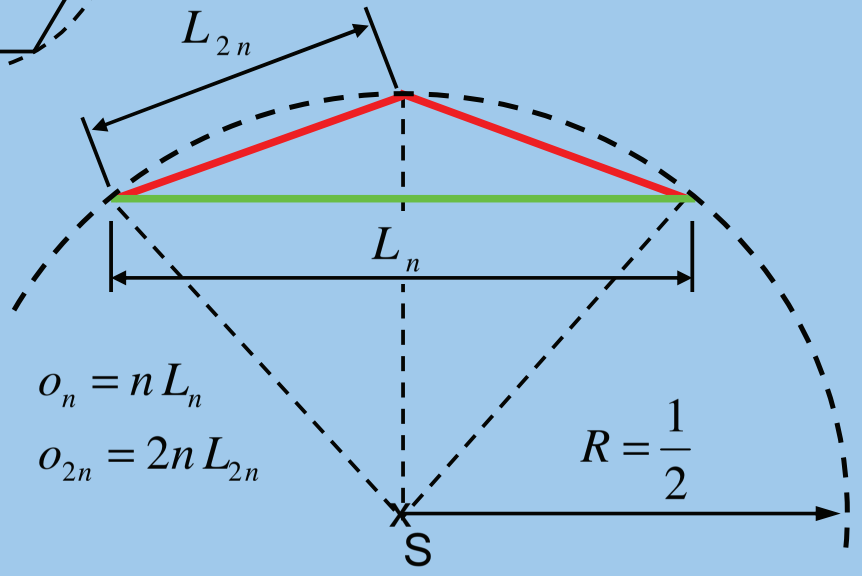
$$= \sqrt{\frac{1}{2} - \sqrt{\left(\frac{1}{2}\right)^2 - \left(\frac{L_n}{2}\right)^2}} = \sqrt{\frac{1 - \sqrt{1 - L_n^2}}{2}}$$

5-3. naloga: **izračunajte število ¶**



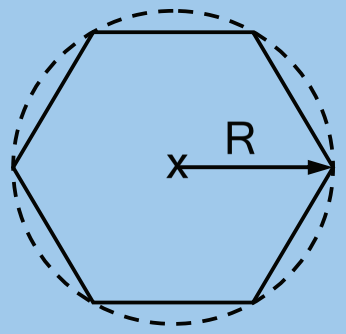
$$o_{krog} = 2\pi R \rightarrow \pi = \frac{o_{krog}}{2R} \approx \frac{o_n}{2R}$$

$$R = \frac{1}{2} \Rightarrow \pi \approx o_n$$



$$o_{2n} = 2n L_{2n} = 2n\sqrt{\frac{1-\sqrt{1-L_n^{\,2}}}{2}} = 2n\sqrt{\frac{1-\sqrt{1-\left(\frac{o_n}{n}\right)^2}}{2}}$$

5-3. naloga: **izračunajte število ¶**



$$o_{krog} = 2\pi R \rightarrow \pi = \frac{o_{krog}}{2R} \approx \frac{o_n}{2R}$$

$$R = \frac{1}{2} \Rightarrow \pi \approx o_n$$

$$o_{n=6} = 6R = 3$$

1. varianta rekurzivnega izračuna:

$$o_{2n} = 2n\sqrt{\frac{\left(1-\sqrt{1-\left(\frac{o_n}{n}\right)^2}\right)}{2}}$$

2. varianta rekurzivnega izračuna:

$$o_{2n} = o_n\sqrt{\frac{2}{\left(1+\sqrt{1-\left(\frac{o_n}{n}\right)^2}\right)}}$$

5-3. naloga: izračunajte število ¶