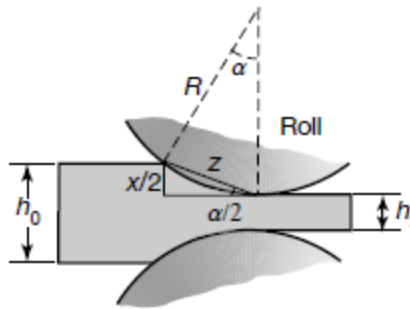


امتیاز هر سوال 4 نمره میباشد.

- 1- Explain the technical and economic reasons for taking larger rather than smaller reductions per pass in flat rolling?
- 2- List and explain the methods that can be used to reduce the roll force?
- 3- It can be seen that in rolling a strip, the rolls will begin to slip if the back tension, σ_b , is too high. Derive an analytical expression for the magnitude of the back tension in order to make the powered rolls begin to slip. Use the same terminology as applied in the text.
- 4- Refer to the figure below. Then, derive the maximum draft is : $h_0 - h_f = R\mu^2$



- 5- Calculate the individual drafts in each of the stands in the tandem-rolling operation shown.

