Home task 1

An optical system consists of three thin lenses. The first has a focal length of +50 mm, the second is placed 40 mm after the first and has a focal length of -30 mm, and the third is placed 40 mm after the second and has a focal length of +50 mm. The aperture stop is at the first lens. An object is placed 100 mm in front of the first lens. Without doing any calculations, i.e., purely from drawing the rays of the system, estimate

a) The image position.
b) The magnification.
c) The positions of the principal and focal planes of the system.
d) The effective focal length of the system.

All quantities are assumed to be paraxial.