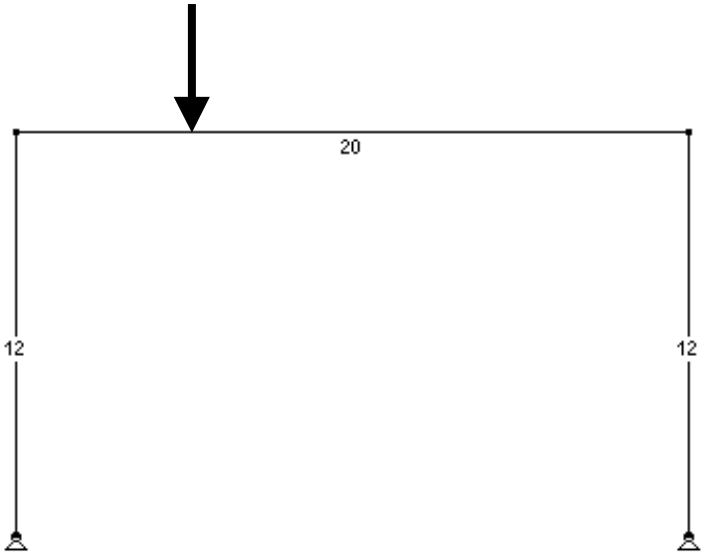
*e*Structures: Prof. D. Schodek, Prof. S. Pollalis


# Frames

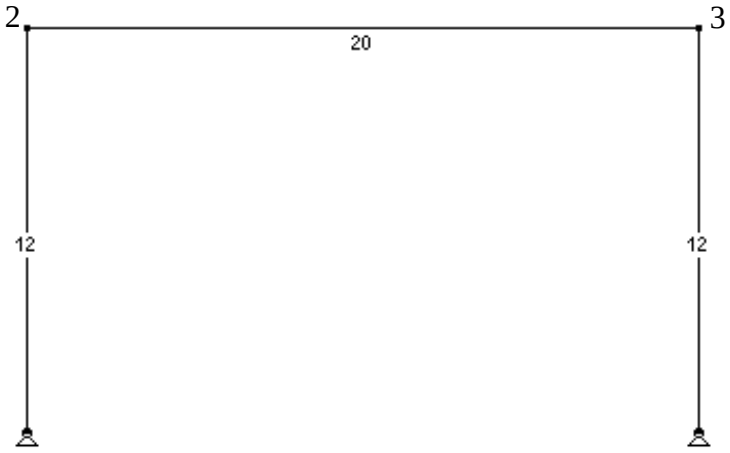
**Problem No. 1**
Draw the approximate deflected shape of the frame shown below. The point load acts at 5 ft from the left.




**Problem No. 2**
The bending moments at the joints of the frame shown below (dimensions shown in feet), subject to a 1 kip/ft uniform load along the beam, are as follows:

$M_2$=-23.78 kip-ft
$M_3$=-23.78 kip-ft

Please draw the approximate bending moment diagram of the frame.

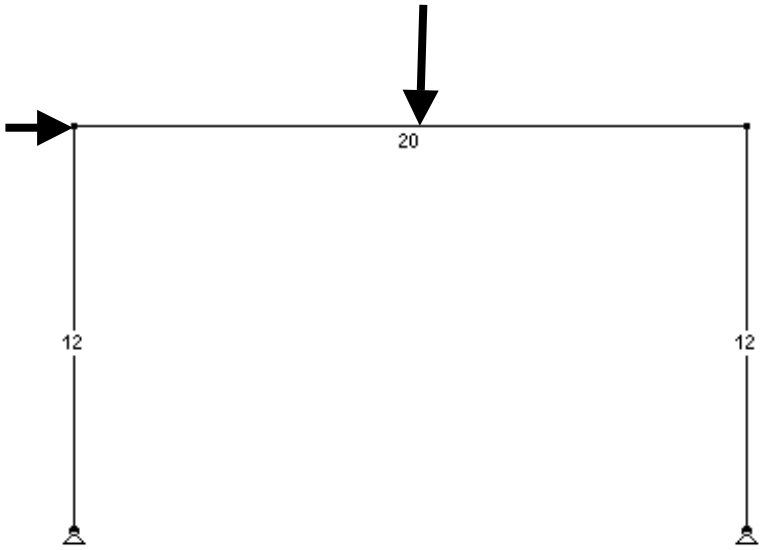


**Problem No. 3**

The frame shown below is subject to a single point load of 20 kip at the middle of the beam and a horizontal force of 10 kip acting on the left joint. The reactions at the supports are as follows:

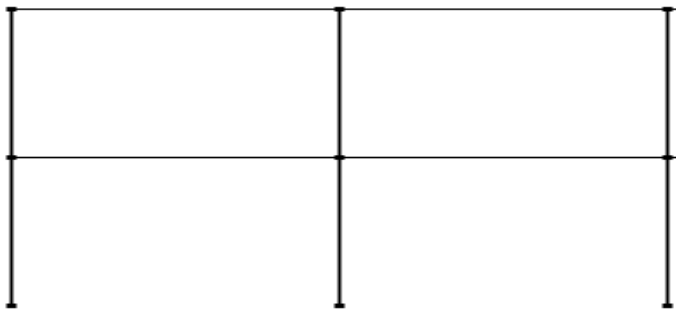
$V_{left}$=4 kip (vertical component of the reaction)
$H_{left}$=-5 kip (horizontal component of the reaction)
$V_{right}$=16 kip
$H_{right}$=-5 kip

Please draw the bending moment diagram of the frame.

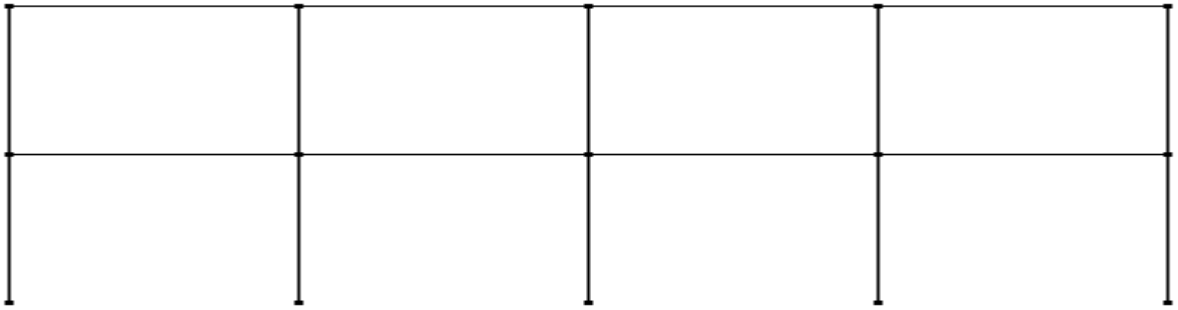



**Problem No. 4**

What are the loading conditions that you should consider for the design of the frame shown below, subject to a uniform live load?



**Problem No. 5**
What are the loading conditions that you should consider for the design of the fame shown below, subject to a uniform live load?



**Problem No. 6**
Draw schematically the steel reinforcement for bending of the concrete frame shown below, subject to uniform continuous load along its beam.