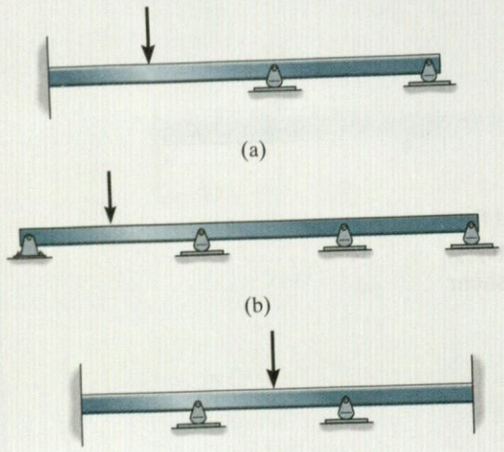
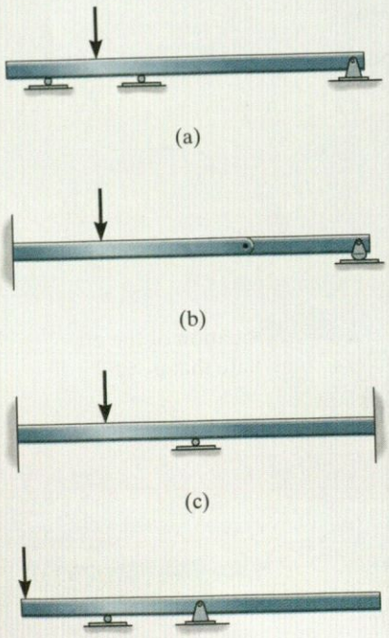
FUNDAMENTAL PROBLEMS

F8–1. Draw the deflected shape of each beam.



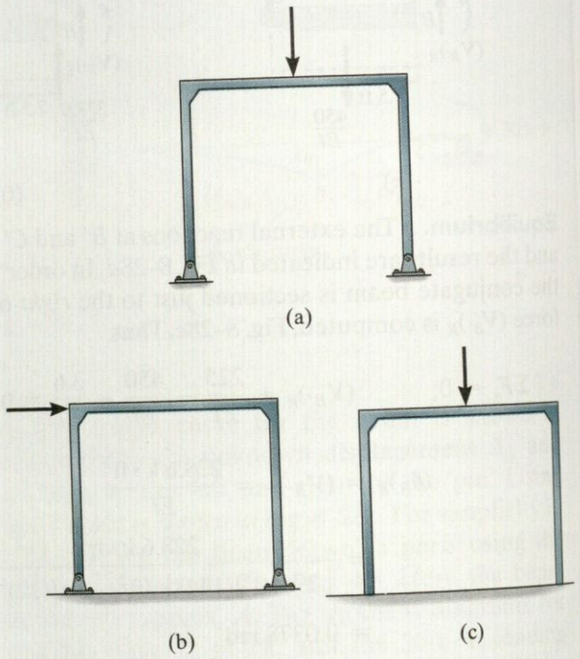
F8–1

F8–2. Draw the deflected shape of each beam.



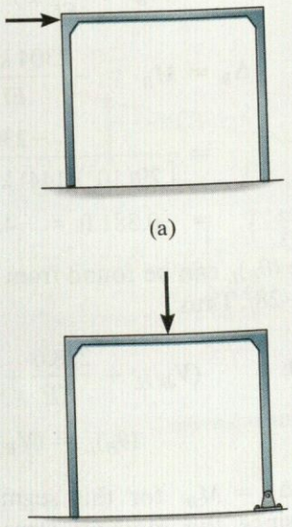
F8–2

F8–3. Draw the deflected shape of each frame.



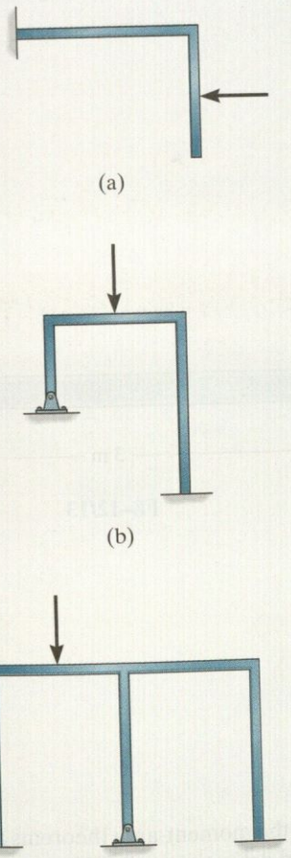
F8–3

F8–4. Draw the deflected shape of each frame.



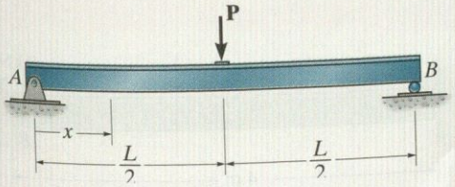
F8–4

F8–5. Draw the deflected shape of each frame.



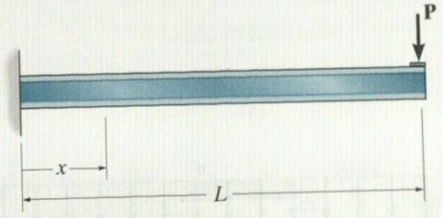
F8–5

F8–6. Determine the equation of the elastic curve for the beam using the x coordinate that is valid for $0 < x < L$. EI is constant.



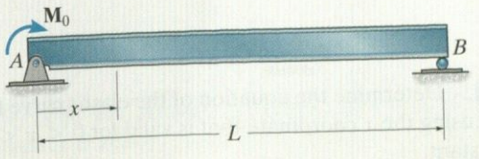
F8–6

F8–7. Determine the equation of the elastic curve for the beam using the x coordinate that is valid for $0 < x < L$. EI is constant.



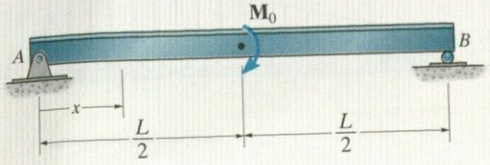
F8–7

F8–8. Determine the equation of the elastic curve for the beam using the x coordinate that is valid for $0 < x < L$. EI is constant.



F8–8

F8–9. Determine the equation of the elastic curve for the beam using the x coordinate that is valid for $0 < x < L$. EI is constant.

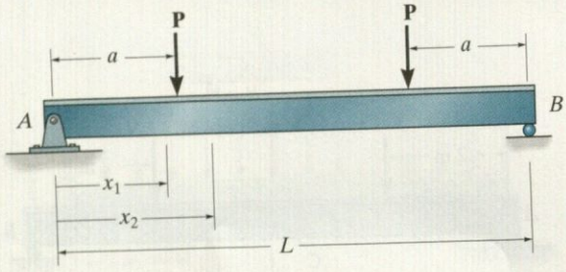


F8–9

PROBLEMS

Sec. 8.1–8.3

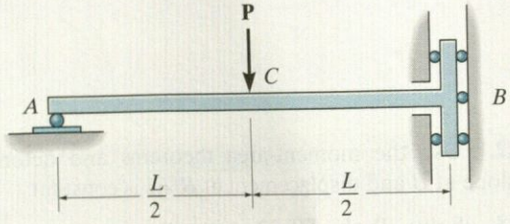
8–1. Determine the equations of the elastic curve for the beam using the x_1 and x_2 coordinates. Specify the slope at A and the maximum deflection. EI is constant.



Prob. 8–1

8–2. The bar is supported by a roller constraint at B, which allows vertical displacement but resists axial load and moment. If the bar is subjected to the loading shown, determine the slope at A and the deflection at C. EI is constant.

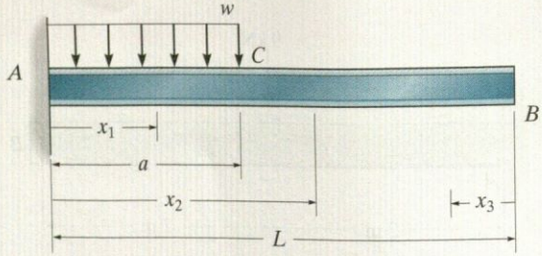
8–3. Determine the deflection at B of the bar in Prob. 8–2.



Probs. 8–2/3

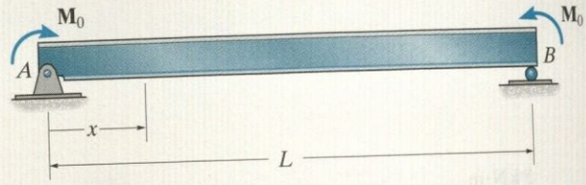
***8–4.** Determine the equations of the elastic curve using the coordinates x_1 and x_2 and specify the slope and deflection at B. EI is constant.

8–5. Determine the equations of the elastic curve using the coordinates x_1 and x_3 and specify the slope and deflection at point B. EI is constant.



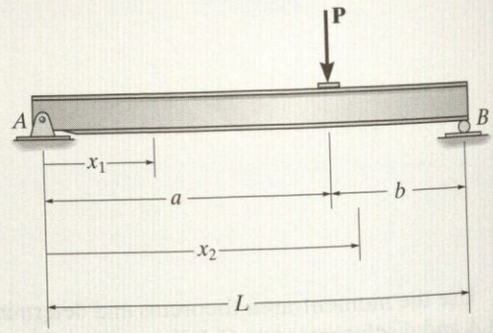
Probs. 8–4/5

8–6. Determine the equations of the elastic curve for the beam using the x coordinate. Specify the slope at A and the maximum deflection of the beam. EI is constant.



Prob. 8–6

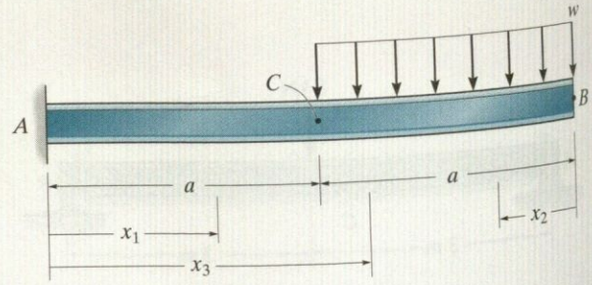
8–7. Determine the equations of the elastic curve using the x_1 and x_2 coordinates. EI is constant.



Prob. 8–7

***8–8.** Determine the equations of the elastic curve using the coordinates x_1 and x_2 and specify the slope at C and displacement at B. EI is constant.

8–9. Determine the equations of the elastic curve using the coordinates x_1 and x_3 and specify the slope at B and deflection at C. EI is constant.

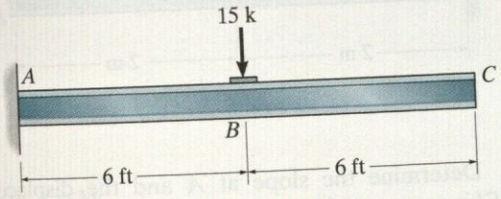


Probs. 8–8/9

Sec. 8.4–8.5

8–10. Determine the slope at B and the maximum displacement of the beam. Use the moment-area theorems. Take $E = 29(10^3)$ ksi, $I = 500\ \text{in}^4$.

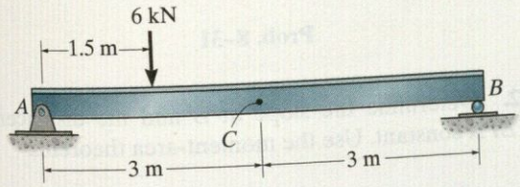
8–11. Solve Prob. 8–10 using the conjugate-beam method.



Probs. 8–10/11

***8–12.** Use the moment-area theorems and determine the slope at A and displacement at C. EI is constant.

8–13. Solve Prob. 8–12 using the conjugate beam method.



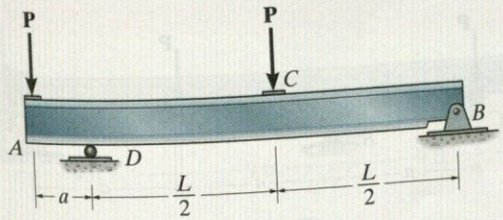
Probs. 8–12/13

8–14. Determine the value of a so that the slope at A is equal to zero. EI is constant. Use the moment-area theorems.

8–15. Solve Prob. 8–14 using the conjugate-beam method.

***8–16.** Determine the value of a so that the displacement at C is equal to zero. EI is constant. Use the moment-area theorems.

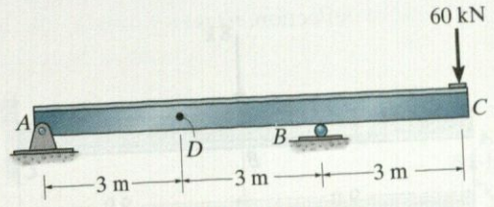
8–17. Solve Prob. 8–16 using the conjugate-beam method.



Probs. 8–14/15/16/17

8–18. Determine the slope at D and the displacement at the end C of the beam. EI is constant. Use the moment-area theorems.

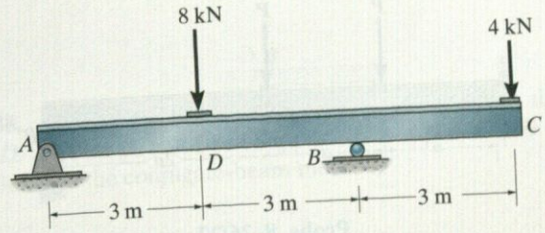
8–19. Solve Prob. 8–18 using the conjugate-beam method.



Probs. 8–18/19

***8–20.** Determine the slope and the displacement at the end C of the beam. $E = 200$ GPa, $I = 70(10^6)\ \text{mm}^4$. Use the moment-area theorems.

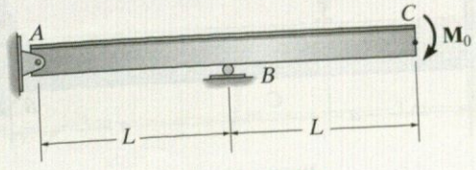
8–21. Solve Prob. 8–20 using the conjugate-beam method.



Probs. 8–20/21

8–22. Determine the displacement and slope at C. EI is constant. Use the moment-area theorems.

8–23. Solve Prob. 8–22 using the conjugate-beam method.



Probs. 8–22/23

8