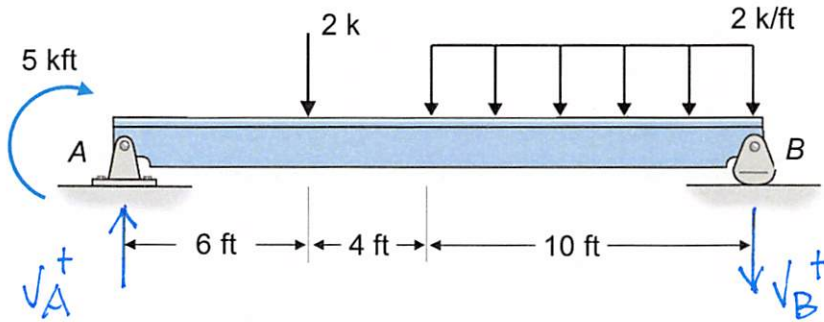


Construct a complete shear force and bending moment diagram for the following beam.

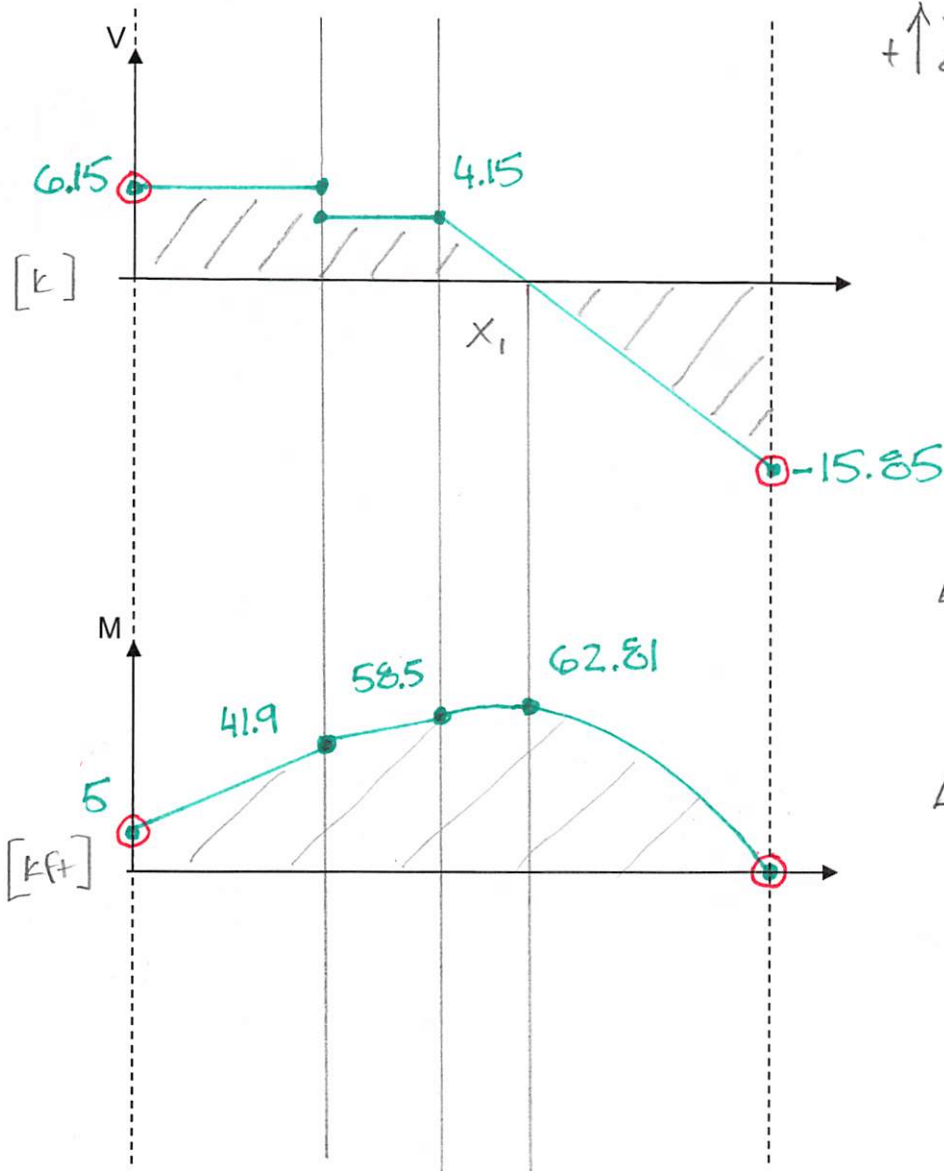


$$\sum M_B = 0 = 20^k(5') + 2^k(14') - 5kft - V_A(20')$$

$$V_A = 6.15^k$$

$$\sum F_y = 0 = V_A - V_B - 20^k - 2^k$$

$$V_B = -15.85^k$$



$$x_1 = \frac{4.15^k}{2^k/ft} = 2.075'$$

$$\Delta V = \int w dx \quad \frac{dV}{dx} = w$$

$$\Delta M = \int V dx \quad \frac{dM}{dx} = V$$

a) What is the maximum bending moment, and where does it occur?

62.81 kft @ 12.08'

b) What is the maximum shear force, and where does it occur?

-15.85 k @ B

c) What is the slope of the bending moment diagram at x = 10 ft?

4.15 k