and the equivalent point load at 

\[
\frac{2x}{3} \text{ is } 50x^2 \text{ N}
\]
as shown. Summing forces yields

\[
416.67 - 50x^2 - V(x) = 0
\]
or

\[
V(x) = 416.67 - 50x^2 \text{ N}.
\]

Summing moments about \(A\) yields

\[
-x(416.67 - 50x^2) - \frac{100x^3}{3} + M(x) = 0
\]
or

\[
M(x) = 416.67x - 50x^3 + \frac{100x^3}{3} = 416.67x - \frac{50}{3}x^3 \text{ Nm}.
\]

Note

\[
dM/dx = V(x).
\]
The plots are given in the computer solution section and sketched here