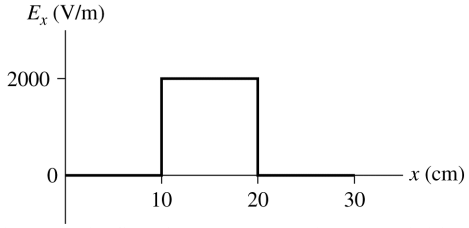
30.5. **Model:** The electric field is the negative of the slope of the graph of the potential function.
Solve: There are three regions of different slope. For 0 cm < x < 10 cm and 20 cm < x < 30 cm,

$$\frac{\Delta V}{\Delta x} = 0 \text{ V / m} \Rightarrow E_x = 0 \text{ V/m}$$

For 10 cm < x < 20 cm,

$$\frac{\Delta V}{\Delta x} = \frac{-100 \text{ V} - (100 \text{ V})}{0.20 \text{ m} - 0.10 \text{ m}} = -2000 \text{ V / m} \Rightarrow E_x = +2000 \text{ V/m}$$



Assess: Because $E_s = -dV/ds$, the electric field is zero where the potential is not changing.