

32. We use Eq. 25-41. This is an ordinary derivative since the potential is a function of only one variable.

$$\begin{aligned}\vec{E} &= -\left(\frac{dV}{dx}\right)\hat{i} = -\frac{d}{dx}(1500x^2)\hat{i} = (-3000x)\hat{i} \\ &= (-3000\text{ V/m}^2)(0.0130\text{ m})\hat{i} = (-39\text{ V/m})\hat{i} .\end{aligned}$$