Answers to Even Exercises, Homework Set 15

Section 13.5 # 8 (b) curl $\vec{F} = -\frac{\partial P}{\partial y}\vec{k}$ is a vector pointing in the negative z-direction.

Section 13.6# 40 The surface integral over each side has value 4, so

$$q = \epsilon_0 \sum_{i=1}^{6} \int\int_{S_i} \vec{E} \cdot d\vec{S} = 24\epsilon_0$$

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Section 13.8# 20 (a) P_1 is a source, and P_2 is a sink (b) $\div\vec{F} = 1 + 2y$ so if $y \approx -1$, $\div\vec{F} < 0$ and if $y \approx 1$, $\div\vec{F} > 0$.