32. (a) The discussion in §17-5 regarding the argument of the sine function $(kx + \omega t)$ makes it clear that the wave is traveling in the negative y direction. Thus, $\vec{S}$ points in the $-\hat{\mathrm{j}}$ direction.

(b) Since $\vec{E} \times \vec{B} \propto \vec{S}$ and $\vec{B}$ points in the $\hat{\mathrm{i}}$ direction, then we may conclude that $\vec{E}$ points in the $-\hat{\mathrm{k}}$ direction (recall that $\hat{\mathrm{k}} \times \hat{\mathrm{i}} = \hat{\mathrm{j}}$). Therefore, $E_x = E_y = 0$ and $E_z = -cB\sin(kx + \omega t)$.

(c) Since $E_x = E_y = 0$, the wave is polarized along the z axis.