Question #15043

Given $V = kQ\sqrt{x^2+y^2}$, we obtain: $\vec{E} = -\nabla V = -kQ\left(\frac{x}{\sqrt{x^2+y^2}}, \frac{y}{\sqrt{x^2+y^2}}\right)$. The magnitude is $|\vec{E}| = kQ\sqrt{\frac{x^2}{x^2+y^2}+\frac{y^2}{x^2+y^2}} = kQ$. We can see, the the potential is spherically-symmetric, so the field goes into the center of the xy plane. Here is the sketch of a vector field: