Normalize:

$$\frac{2\cdot\varepsilon\cdot E}{\sigma}=\frac{R}{h}\cdot\left(\sqrt{1+\frac{L^2}{R^2}-\frac{h}{R}\cdot\frac{L}{R}+\left(\frac{h}{2\cdot R}\right)^2}-\sqrt{1+\frac{L^2}{R^2}+\frac{h}{R}\cdot\frac{L}{R}+\left(\frac{h}{2\cdot R}\right)^2}-\sqrt{L^2-h\cdot L+\left(\frac{h}{2}\right)^2}+\sqrt{L^2+h\cdot L+\left(\frac{h}{2}\right)^2}\right)$$

Let $E'=\frac{2\cdot\varepsilon\cdot E}{\sigma}$, $h'=\frac{h}{R}$ and $L'=\frac{L}{R}$ and substitute

$$E'=\frac{1}{h'}\cdot\left(\sqrt{1+L'^2-h'\cdot L'+\left(\frac{h'}{2}\right)^2}-\sqrt{1+L'^2+h'\cdot L'+\left(\frac{h'}{2}\right)^2}-\sqrt{L'^2-h'\cdot L'+\left(\frac{h'}{2}\right)^2}+\sqrt{L'^2+h'\cdot L'+\left(\frac{h'}{2}\right)^2}\right)$$

Plot E' versus L' for h'=0.1.