Falling ball

a)

$$\frac{1}{2}mv^2 = mgh \quad \Rightarrow \quad \frac{1}{2}v^2 = gh \qquad V = \sqrt{2gh}$$

$$e = -\frac{v_{fp} - v_{fb}}{v_{ip} - v_{ib}} \qquad\qquad v_{ip} = 0$$
$$v_{fp} = 0$$

$$e = -\frac{v_{fb}}{v_{ib}} = \frac{-\sqrt{2gh_1}}{\sqrt{-2gh_0}} = \sqrt{\frac{2gh_1}{2gh_0}} = \sqrt{\frac{h_1}{h_0}}$$