

$$Q = \sqrt{3} \sqrt{\frac{1}{4} + \frac{5}{4} \frac{r}{\alpha^2 g} + \frac{5|c|}{2} \sqrt{\frac{r}{5\alpha^2 g}}}$$

$$= \frac{\sqrt{3}}{2} \sqrt{1 + 5 \frac{r}{\alpha^2 g} + 2|c| \sqrt{5 \frac{r}{\alpha^2 g}}}$$

(if)

$$r = 3$$

$$g = 2r = 6$$

$$\alpha = 0.8$$

$$|c| = 0.4$$

$$Q = 2.2$$

$$\rightarrow R_{\text{unloaded}} = \frac{4\sqrt{3}}{R_s \cdot W \cdot c_g} = 4.4$$