

$$(r + \Delta r)^2 = \left(\frac{z}{2}\right)^2 + r^2$$

$$r^2 + 2 * r * \Delta r + \Delta r^2 = \frac{z^2}{4} + r^2 .$$

And

$$r = \frac{z^2}{8 * \Delta r} - \Delta r^2$$

$$r \cong \frac{z^2}{8 * \Delta r} .$$