

$$= \frac{R_x (R_z - 1)^2}{R_z + 1} + R_x + \frac{4R_y}{(1 + R_z)^2}$$

$$= \frac{R_x (R_z - 1)^2 (R_z + 1) + R_x (R_z + 1)^2 + 4R_y}{(1 + R_z)^2}$$

$$= \frac{R_x}{(1 + R_z)^2} \left\{ R_z^3 - R_z - R_z^2 + 1 + 1 + R_z^2 + 2R_z + \frac{4R_y}{R_x} \right\}$$

$$\text{Since } 1 + 1 + \frac{4R_y}{R_x} = 2R_z^2$$

$$= \frac{R_x}{(1 + R_z)^2} \left\{ R_z^3 + 2R_z^2 + R_z \right\}$$

$$= \frac{R_x R_z}{(1 + R_z)^2} (R_z^2 + 2R_z + 1) = R_x R_z$$

$$= R_0$$

$$\Rightarrow P_{N, \text{out}} = \frac{K T \Delta f}{R_0} \cdot R_0 = \underline{K T \Delta f}$$

$$\Rightarrow P_{N, \text{in}} = P_{N, \text{out}}$$