1)

схема 1

$$I_A = \frac{U_0}{r + R_A + \frac{R_V * R}{R_V + R}}$$

$$U_V = I_A * \frac{R_V * R}{R_V + R}$$

$$R_1 = \frac{U_V}{I_A} = \frac{R_V * R}{R_V + R} = \frac{1600 * 400}{1600 + 400} = 320\ Ом$$

$$\frac{R_1 - R}{R} * 100\% = \frac{320 - 400}{400} * 100\% = -20\%$$

схема 2

$$I = \frac{U_0}{r + \frac{R_V * (R + R_A)}{R_V + (R + R_A)}}$$

$$U_V = I * \frac{R_V * (R + R_A)}{R_V + (R + R_A)} U_V = I * \frac{R_V * (R + R_A)}{R_V + (R + R_A)}$$

$$I_A = \frac{U_V}{R + R_A}$$

$$R_2 = \frac{U_V}{I_A} = R + R_A = 400 + 4 = 404\ Ом$$

$$\frac{R_2 - R}{R} * 100\% = \frac{404 - 400}{400} * 100\% = 1\%$$

2)

$$\frac{R_2}{R_1} = \frac{(R_V + R) * (R_A + R)}{R_V * R}$$

$$\frac{d\frac{R_2}{R_1}}{dR} = \frac{(R_V + R) * (R_A + R)}{R_V * R} * \left(\frac{1}{R_V + R} + \frac{1}{R_A + R} - \frac{1}{R} \right) = 0$$

$$\left(\frac{1}{R_V + R} + \frac{1}{R_A + R} - \frac{1}{R} \right) = 0$$

$$(R_V + R)(R_A + R) = (R_A + 2R + R_V) * R$$

$$R_V R_A = R^2$$

$$R = \sqrt{R_V R_A} = \sqrt{1600 * 4} = 80\ Ом$$