Problem statement The numbers R_1, R_2, R_3, and R satisfy the following equation:

$$\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = \frac{1}{R}.$$

(Physics and engineering students may recognize this as a formula for the total resistance, R, of a circuit composed of three resistances R_1, R_2, and R_3 connected in parallel.)

a) If $R_1 = 1$ and $R_2 = 2$ and $R_3 = 3$, compute R exactly.

b) If both R_1 and R_3 are held constant, and R_2 is increased by .05, what is the approximate change in R?

c) If both R_1 and R_2 are held constant, and R_3 is increased by .05, what is the approximate change in R?