Three identical resistors are connected in parallel. The equivalent resistance increases by 650 Ohms when one resistor is removed and connected in series with the remaining two, which are still in parallel. Find the resistance of each resistor._____Ohms

In the second case (2 in parallel and 1 in series):

$$R_2 = R_P + R$$

where R_P – resistance of two parallel resistors.

Use equation for the parallel connection:

$$\frac{1}{R_P} = \frac{1}{R} + \frac{1}{R} = \frac{2}{R} \rightarrow R_P = \frac{R}{2}$$

$$R_2 = \frac{R}{2} + R = \frac{3}{2}R$$

In the first case (3 in parallel):

$$\frac{1}{R_1} = \frac{1}{R} + \frac{1}{R} + \frac{1}{R} = \frac{3}{R} \rightarrow R_1 = \frac{R}{3}$$

The equivalent resistance increases by 650 Ohms:

$$R_2 - R_1 = 650\Omega$$

$$\frac{3R}{2} - \frac{R}{3} = 650\Omega$$

$$\frac{7R}{6} = 650\Omega$$

$$R = 557.14\Omega$$

Answer: $R = 557.14\Omega$