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1) $P = \frac{E}{R}$

$E = 200V \qquad R = 8\Omega$

$\Delta E = -5V \qquad \Delta R = 0.2\Omega$

$$\Delta P = \frac{dP}{\partial E} \cdot \Delta E + \frac{\partial P}{\partial R} \cdot \Delta R$$

$$\frac{dP}{\partial E} = \frac{2E}{R} \qquad \frac{dP}{\partial R} = -\frac{E^2}{R^2}$$

$$\Delta P = \frac{2(200)(-5)}{8} + \frac{(-(200) \cdot 0.2)}{8^2}$$

$\Delta P = -250 - 125$

$\Delta P = -375w$

Change in P is $-375w$

2) $y = \frac{Kwd^4}{t^3}$

$$\Delta w = \frac{3w}{100} \qquad \Delta d = \frac{2-5}{100} d$$

$$\Delta t = \frac{4t}{100}$$

$$\frac{dy}{\partial w} = \frac{Kd^4}{t^3} \qquad \frac{\partial y}{\partial d} = \frac{4Kwd^3}{t^3} \qquad \frac{\partial y}{\partial t} = -\frac{3Kwd^4}{t^4}$$

$$\Delta y = \frac{\partial y}{\partial w} \cdot \Delta w + \frac{\partial y}{\partial d} \cdot \Delta d + \frac{\partial y}{\partial t} \cdot \Delta t$$

$$\Delta y = \frac{Kd^4}{t^3} \cdot \frac{3w}{100} + \frac{4Kwd^3}{t^3} \cdot \frac{2.5d}{100} - \frac{3Kwd^4}{t^4} \cdot \frac{4t}{100}$$

$$\Delta y = \frac{Kwd^4}{t^3} \cdot \frac{3}{100} + \frac{4Kwd^4}{t^3} \cdot \frac{2.5}{100} - \frac{3Kwd^4}{t^3} \cdot \frac{12}{100}$$

$$\Delta y = \frac{Kwd^4}{t^3} \left(\frac{03}{100} + \frac{100}{100} - \frac{12}{100} \right)$$

$$\Delta y = \frac{Kwd^4}{t^3} \left(\frac{1}{100} \right)$$

$$y = \frac{Kwd^4}{t^3}$$

$$\therefore \Delta y = \frac{1}{100} y$$

$$= 1\% y$$

$\therefore$ Change in $y = \pm 1\%$