Fayibola Oluwatimilehin.
16/ENG02/019.
Computer Engineering.
Maths (Engineering). ENG281

ANSWERS.

(a) $P = \frac{E^2}{R}$.

$\frac{dP}{dE} = \frac{2E}{R}$ $\frac{dP}{dR} = -\frac{E^2}{R^2}$.

$dE = -5$, $dR = 0.2$, $E = 200$, $R = 8$.

$dP = \frac{2E\,dE}{R} - \frac{E^2}{R^2}\,dR$.

$= \frac{2(200)(-5)}{8} - \frac{(200)^2(0.2)}{8^2}$.

$= \frac{-2000}{8} - \frac{8000}{64}$

$= -250 - 125$

$dP = -375$.

P decreases by $\frac{375}{2}$ W.

Tyisola Oluwatimilehin.
16/ENG02/019

e)

$$y = \frac{kwd^4}{t^2}$$

$$\delta y = K\left[\frac{\delta y}{\delta w}\delta w + \frac{\delta y}{\delta d}\delta d + \frac{\delta y}{\delta t}dt\right].$$

$$\delta y = \frac{\delta}{t^3} + \frac{\delta y}{\delta d} = \frac{4wd^3}{t^3}, \quad \frac{\delta y}{\delta t} = \frac{-3wd^4}{t^4}$$

$$\delta w = {}^{3w}/_{100} \qquad \delta d = {}^{5d}/_{200} \qquad \delta t = {}^{4t}/_{100}$$

$$\delta y = \left[\frac{kd^4}{t^3}\left[\frac{3w}{100}\right]\right] + \frac{kwd^3}{t^3}\left[{}^{5d}/_{2w}\right] - \frac{k^2wd^4}{t^4}\left[\frac{wt}{w}\right].$$

$$dy = \frac{3kwd^4}{100t^3} + \frac{100wd^4k}{200t^3} - \frac{12kwd^4}{100t^3}$$

$$\delta y = \frac{1}{100}\left[\frac{3kwd^4}{t^3} + \frac{10kwd^4}{t^3} - \frac{12kwd^4}{t^3}\right].$$

$$\delta y = \frac{1}{100}\left[3y + 10y - 12y\right]$$

$$\delta y = \frac{1}{100}\left[-y\right].$$

$$\delta y = \frac{1}{100}y.$$

y increase by 1/100 percent.