$$\frac{Dp}{P} = \frac{D\theta}{\theta}$$

$$P = \left(\frac{Bdl}{(\text{Sin}\,\theta_2 - \text{Sin}\,\theta_1)}\right)\frac{1}{\text{Cos}\,\theta}$$

for straight forward

$$P = \left(\frac{Bdl}{(\text{Sin}\,\theta_2 - \text{Sin}\,\theta_1)}\right)$$

With a constant magnetic field, BDl does not change so it is contant

Also, for a small angle $\text{Sin}\,\theta_2 - \text{Sin}\,\theta_1 = \theta_2 - \theta_1 = \theta$

So :

$P = \frac{K}{\theta}$ where K is some constant

$$\frac{dp}{d\theta} = \frac{-K}{\theta^2}$$

$$dP = \frac{-K\,d\theta}{\theta^2}$$

Now divide both sides by P

$$\frac{dP}{P} = \frac{-K\,d\theta}{\theta^2} * \frac{1}{P}$$

but $P = \frac{K}{\theta}$ so sub into right hand side

$$\frac{dP}{P} = \frac{-K\,d\theta}{\theta^2} * \frac{\theta}{K}$$

therefore

$$\frac{dP}{P} = \frac{-d\theta}{\theta}$$

```
(*Small angle*)
Sin[.2]
```

Out[1]= 0.198669