



"Oed Fashioned"
45 rpm record

$$a.) \omega = 45 \text{ rpm} = 45 \frac{\text{revolution}}{\text{min}} \left(\frac{2\pi \text{ rad}}{1 \text{ rev.}} \right) \left(\frac{1 \text{ min}}{60 \text{ s}} \right)$$

$$= \underline{4.712 \text{ rad/s}}$$

$$b.) \text{ Period, } T = \frac{2\pi}{\omega} = \underline{1.333 \text{ s.}}$$

c.) what is the acceleration of a fly that lands at $r = 5 \text{ cm}$ on the record?

$$v = r\omega = 0.2358 \text{ m/s}$$

$$\text{So } a_r = \frac{v^2}{r} = \underline{1.112 \text{ m/s}^2}$$

$$\text{or, } a_r = \frac{v^2}{r} = \frac{r^2\omega^2}{r} = r\omega^2$$