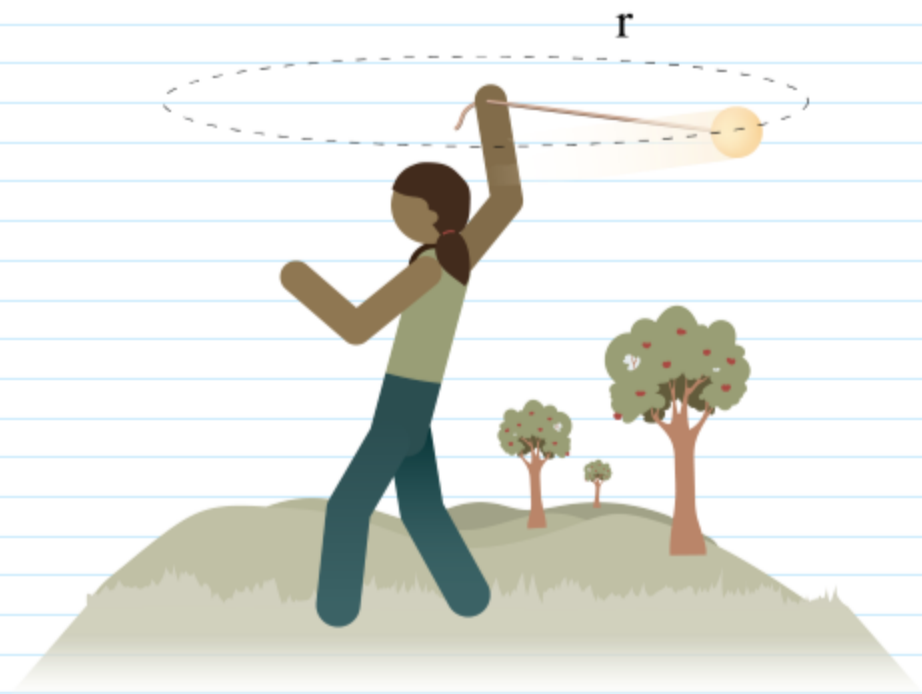


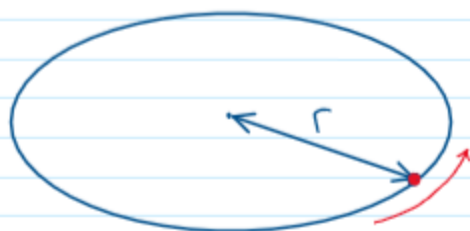
21-P-KM-GD-010



A young girl is playing in a field with a ball tied to the end of a string of radius  $r = \frac{1}{3}$  m.

She swings the ball at a velocity of  $v = \frac{At^3}{3}$  m/s, where  $t$  is in seconds.

Find the magnitude of the ball's acceleration when  $t = \frac{1}{3}$  s.



given

$A$   
 $t$

Find

$a_t$   
 $a_n$   
 $a$

$V = \frac{At^3}{3}$  sub in the given  $t$ .  $V$

$a_t = 3At^2$  sub in the given  $t$ .  $a_t$

$a_n = \frac{V^2}{r}$

$a = \sqrt{a_t^2 + a_n^2}$