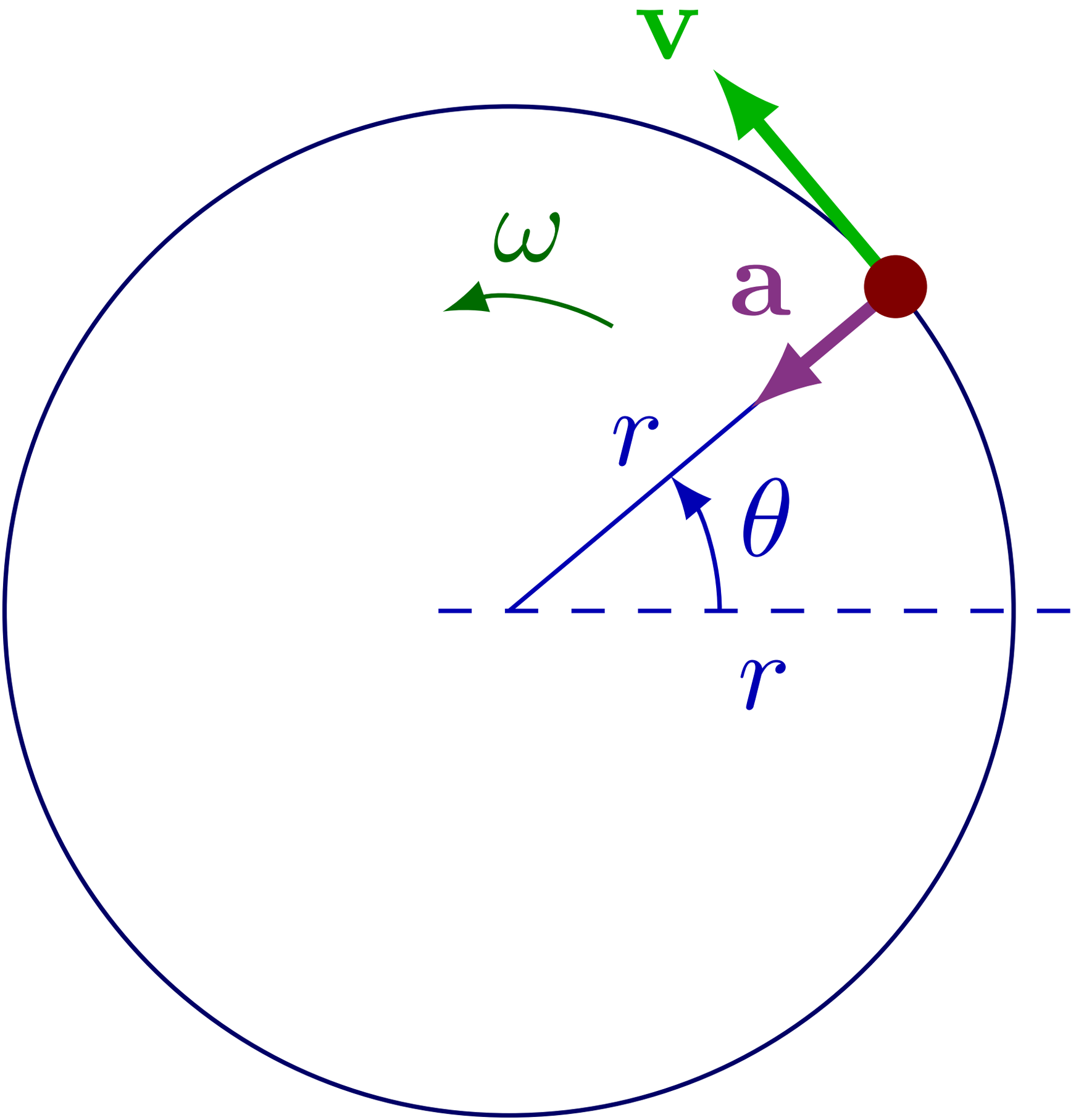
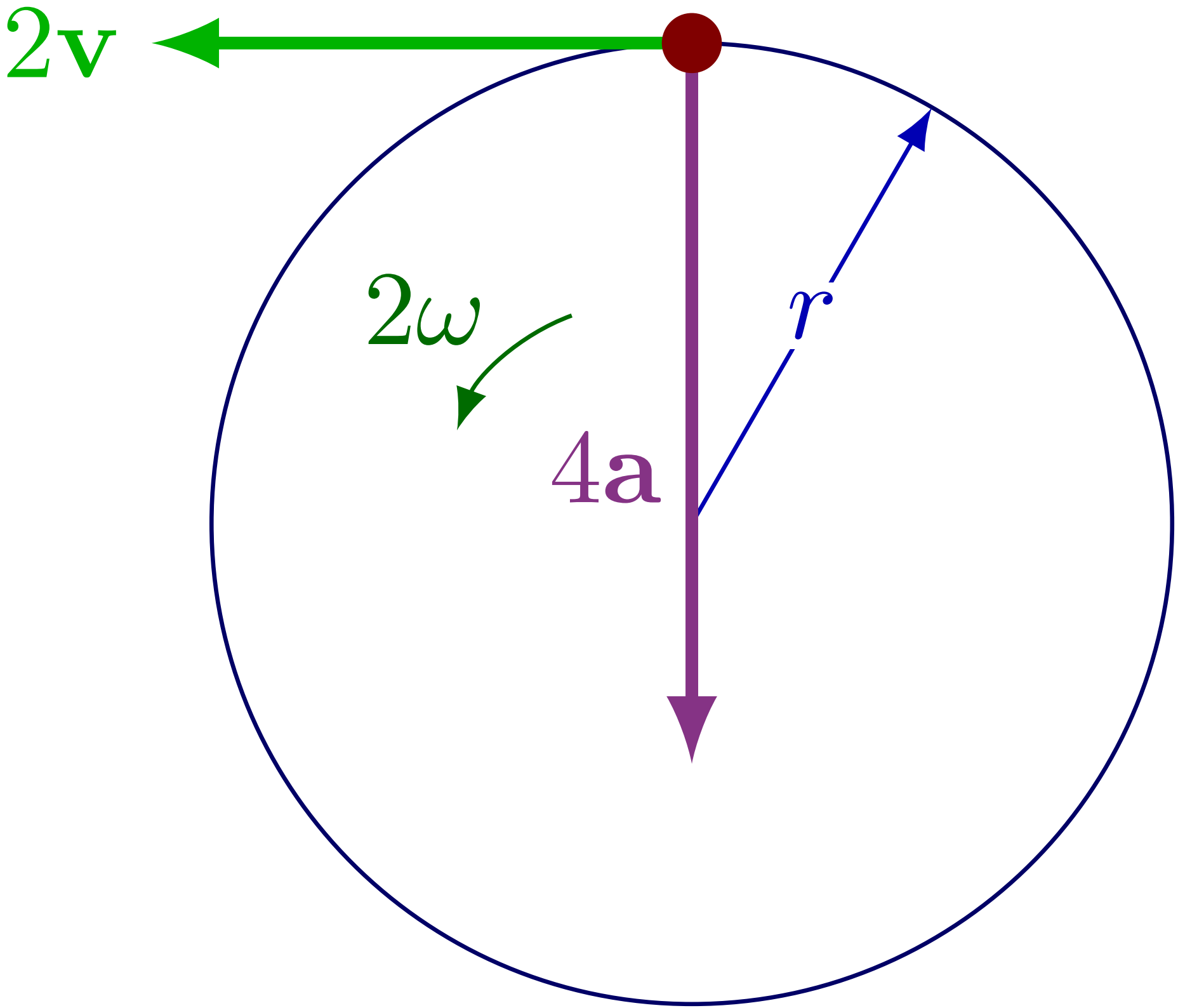
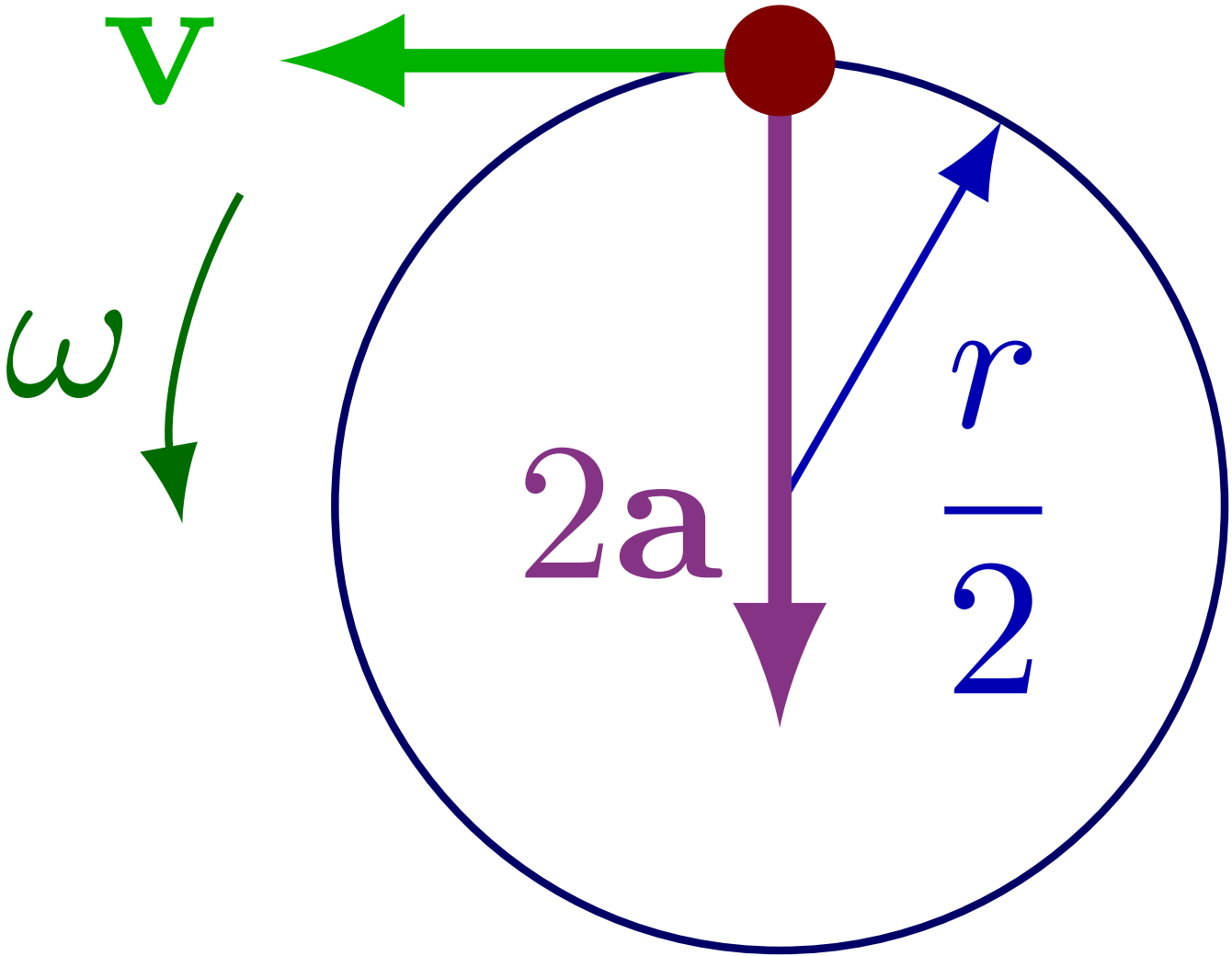
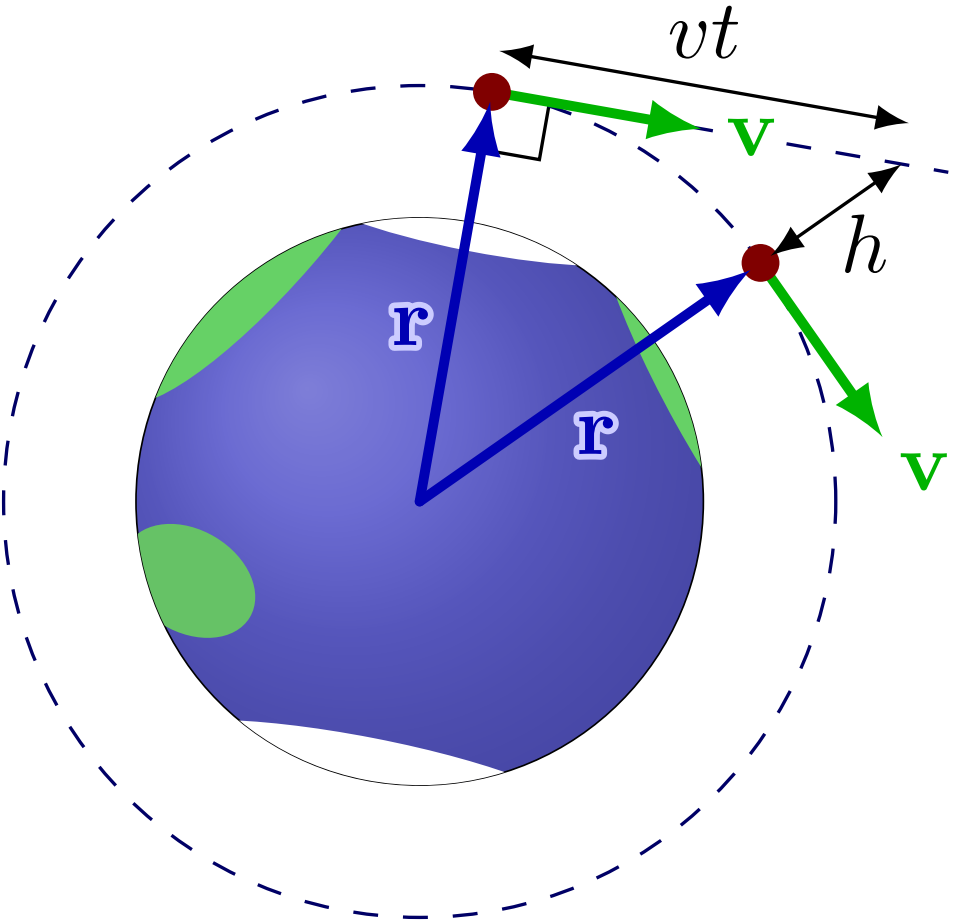
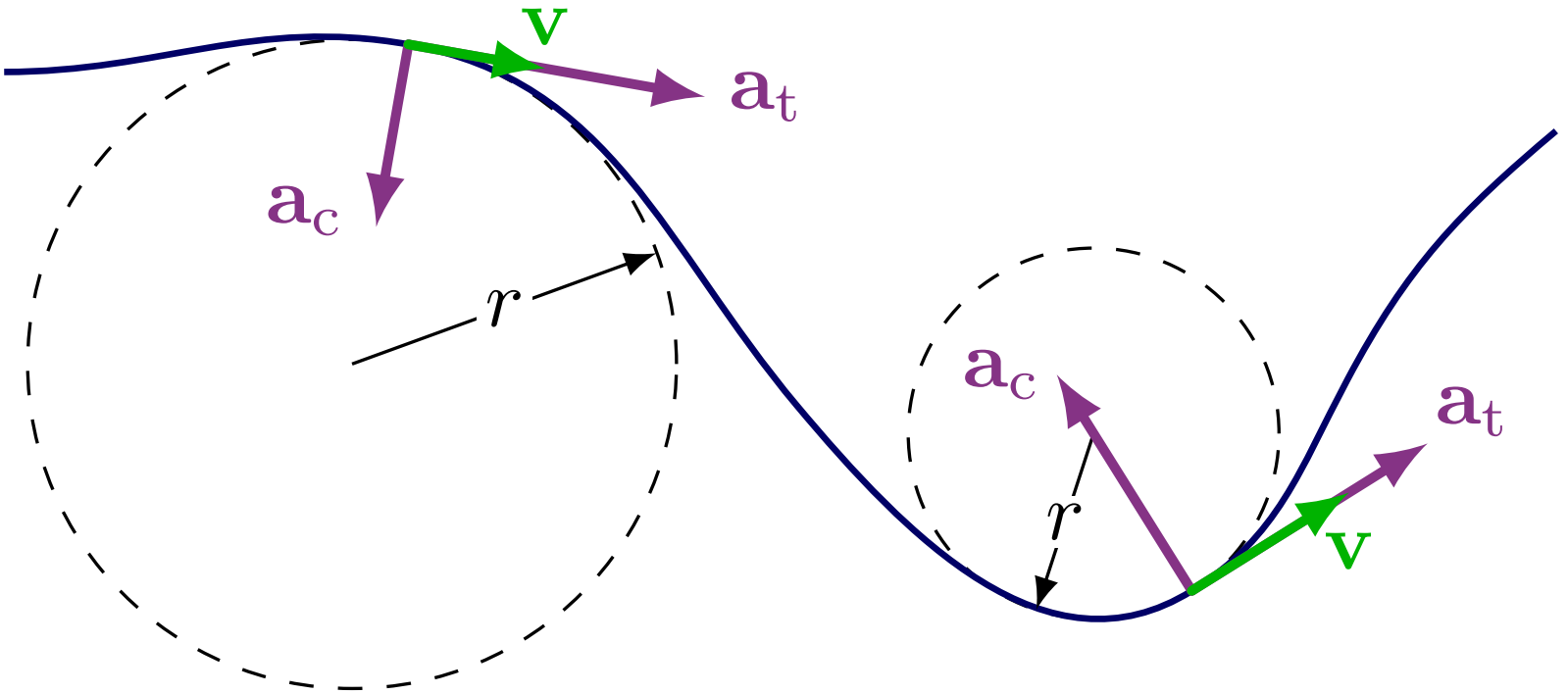

v
ω
a
r
θ
r


2v
2ω
r
4a


v
ω
2a
r/2


vt
$\mathbf{v}$
h
$\mathbf{r}$
$\mathbf{r}$
$\mathbf{v}$


$\mathbf{v}$
$\mathbf{a}_\mathrm{t}$
$\mathbf{a}_\mathrm{c}$
r
$\mathbf{a}_\mathrm{c}$
$\mathbf{a}_\mathrm{t}$
r
$\mathbf{v}$