



## Tippe top

### Part A (10.0 points)

**A.1** (1.0 pt)

$F_{\text{ext}} =$

**A.2** (0.8 pt)

$\tau_{\text{ext}} =$



**A.3** (0.4 pt)

**A.4** (0.8 pt)

$\omega =$

**A.5** (1.0 pt)

$E_T =$



**A.6** (0.4 pt)

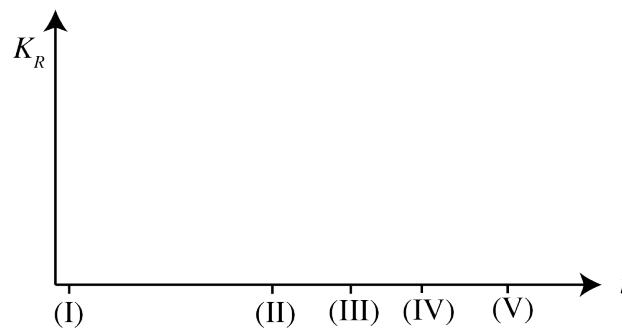
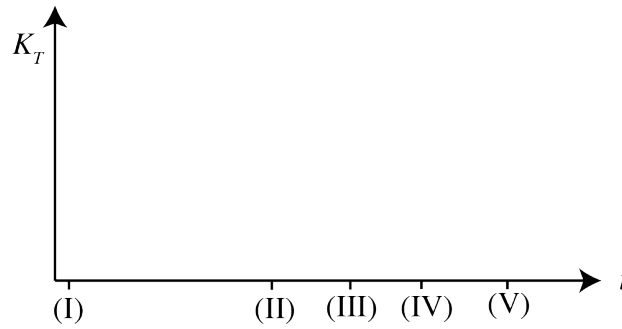
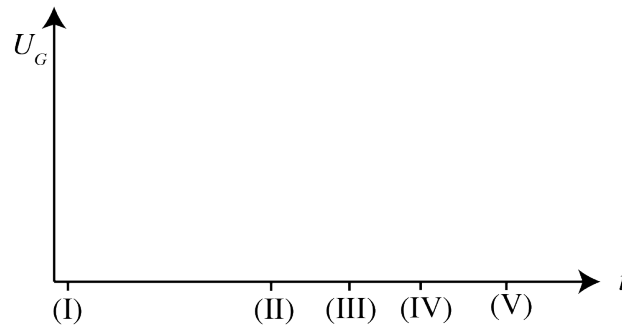
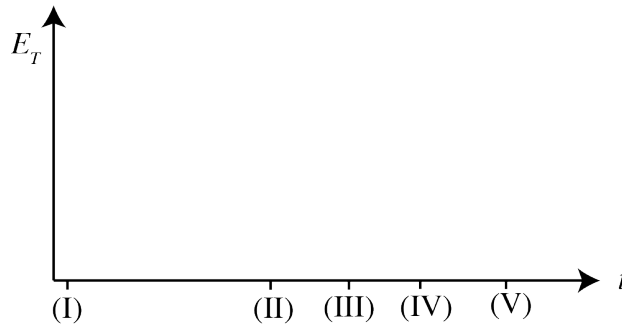
$$\frac{dL_z}{dt} =$$

**A.7** (1.4 pt)

$$\frac{dE_T}{dt} =$$



A.8 (2.0 pt)





**A.9** (0.5 pt)

$k =$

**A.10** (1.7 pt)

$\mathbf{v} =$