This equation is of the form

$\ddot{\theta} + \Omega^2 \theta = 0$ with

$$\Omega^2 = \frac{1}{ma^2}\left[mga - ma^2\omega^2 \right] \Rightarrow$$

$$\Omega^2 = \left[g/a - \omega^2 \right] \Rightarrow$$

$$\boxed{\Omega = \left[g/a - \omega^2 \right]^{1/2}}$$

As Figure 9.10 shows, $\theta = 0$ is no longer a minimum for '$V(\theta)$' if $\omega^2 > g/a$. Then '$V(\theta)$' has the shape '$\vee$'