$$
\begin{aligned}
\omega &= \sqrt{\frac{g}{r}} \\
v_{air} &= \omega < -y, x > \\
m\frac{dv}{dt} &= F_{drag} \\
F_{drag} &= \frac{1}{2} C_D A \rho \left| v_{air} - v \right|^2 \frac{v_{air} - v}{|v_{air} - v|}
\end{aligned}
$$