1 Etestigngngnn XAMPLE TEX FILE

Here are some example aerodynamic equations used in the analysis of flight dynamics:

1.1 Lift Equation

The lift force generated by an object is given by:

$$L = \frac{1}{2}\rho v^2 C_L A \tag{1}$$

where:

- L is the lift force (N),
- ρ is the air density (kg/m^3),
- v is the velocity of the object relative to the air (m/s),
- C_L is the lift coefficient (dimensionless),
- A is the reference area (m^2).

1.2 Drag Equation

The drag force acting on an object is given by:

$$D = \frac{1}{2}\rho v^2 C_D A \tag{2}$$

where:

- D is the drag force (N),
- C_D is the drag coefficient (dimensionless).

1.3 Reynolds Number

The Reynolds number, a dimensionless quantity, is used to predict flow patterns in different fluid flow situations:

$$Re = \frac{\rho v L}{\mu} \tag{3}$$

where:

- Re is the Reynolds number,
- L is the characteristic length (m),
- μ is the dynamic viscosity of the fluid (Pa·s).

1.4 Bernoulli's Equation

Bernoulli's principle for incompressible flow is expressed as:

$$P + \frac{1}{2}\rho v^2 + \rho g h = \text{constant} \tag{4}$$

where:

- P is the static pressure (Pa),
- g is the acceleration due to gravity (m/s^2),
- h is the height above a reference point (m).

1.5 Equation of Continuity

The equation of continuity for incompressible flow is:

$$A_1 v_1 = A_2 v_2 \tag{5}$$

where:

- A_1 and A_2 are the cross-sectional areas (m^2),
- v_1 and v_2 are the flow velocities (m/s).