ASEN 2004: Vehicle Design and Performance

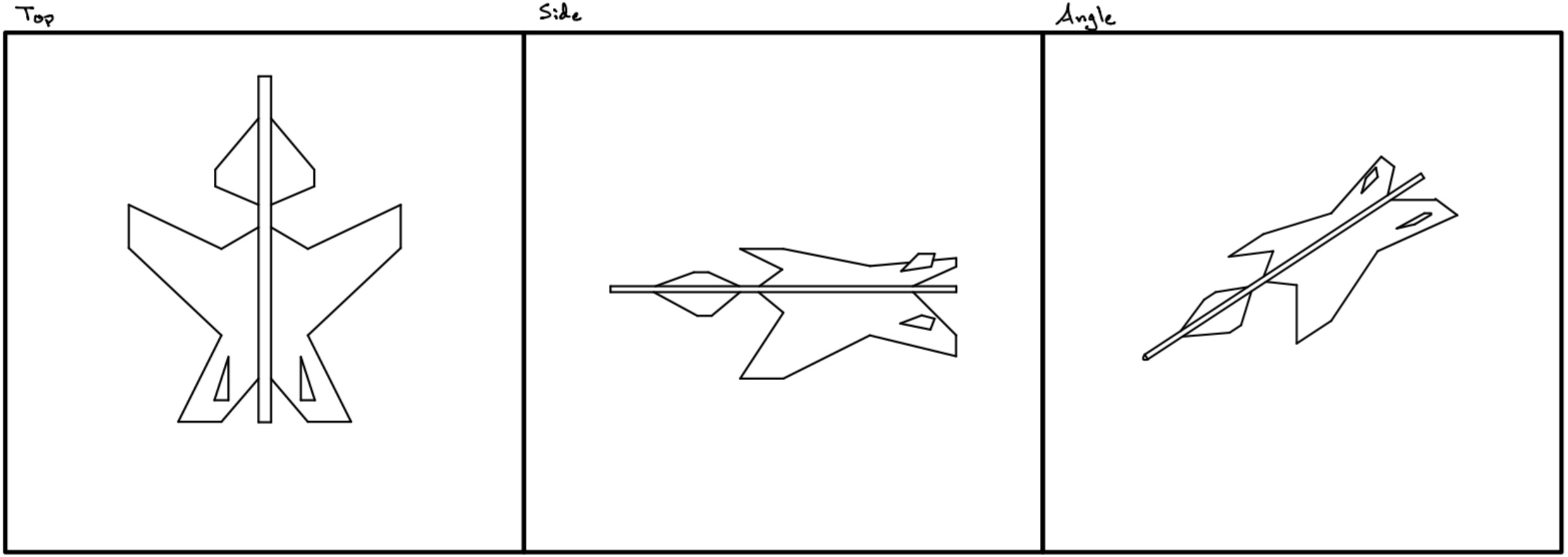
Aero Lab Milestone 2 Individual Glider Design Concept

Peyton Early

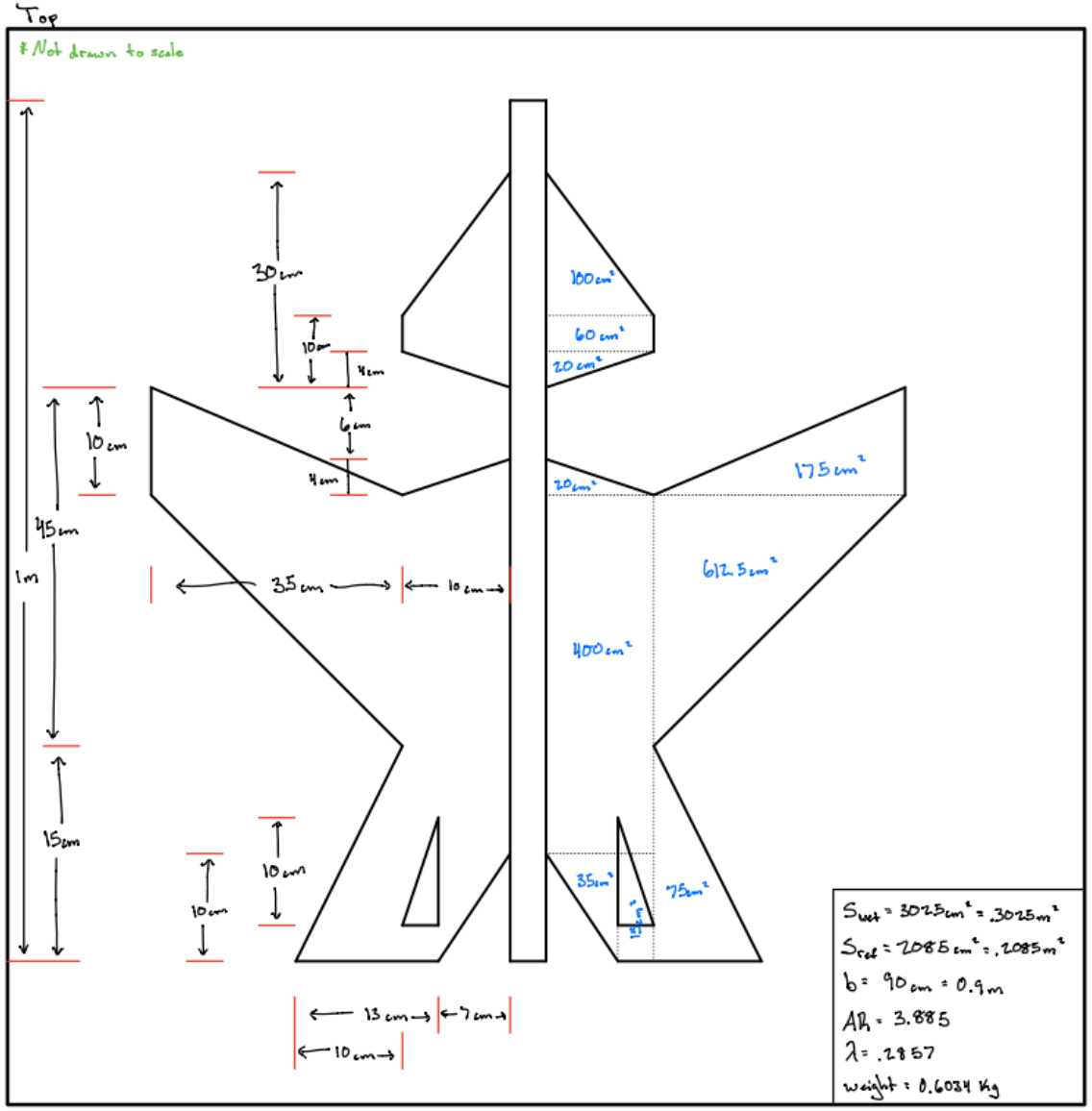
Section 013

Team 12

Aircraft Design Geometry and Key Parameters

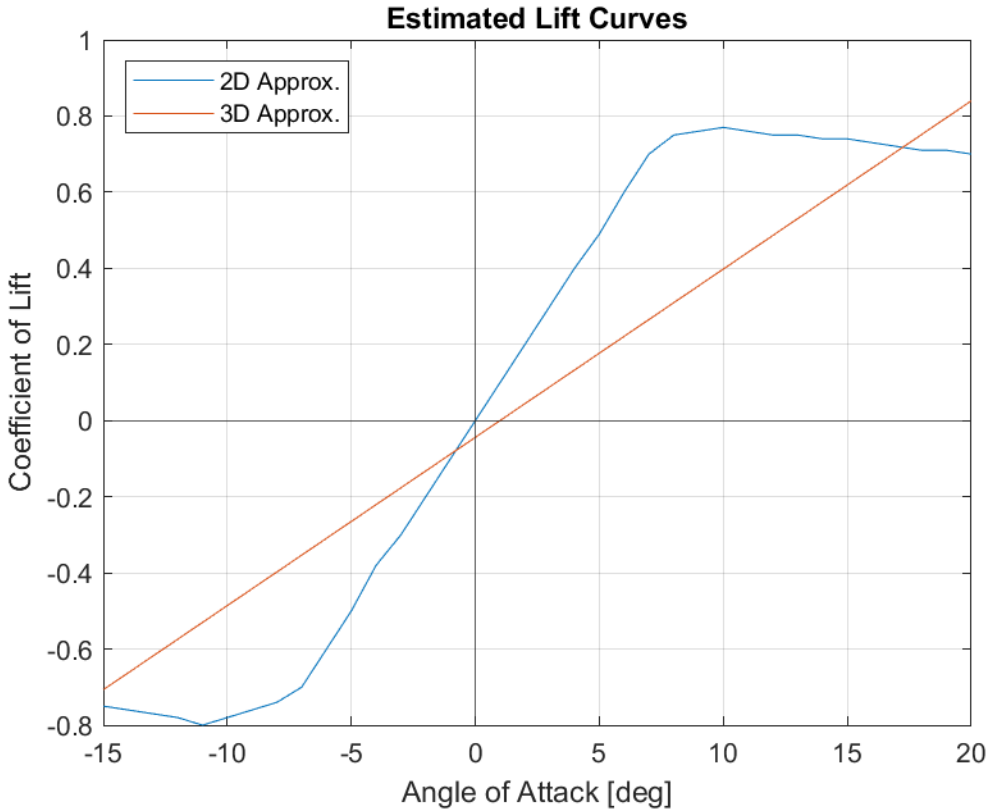


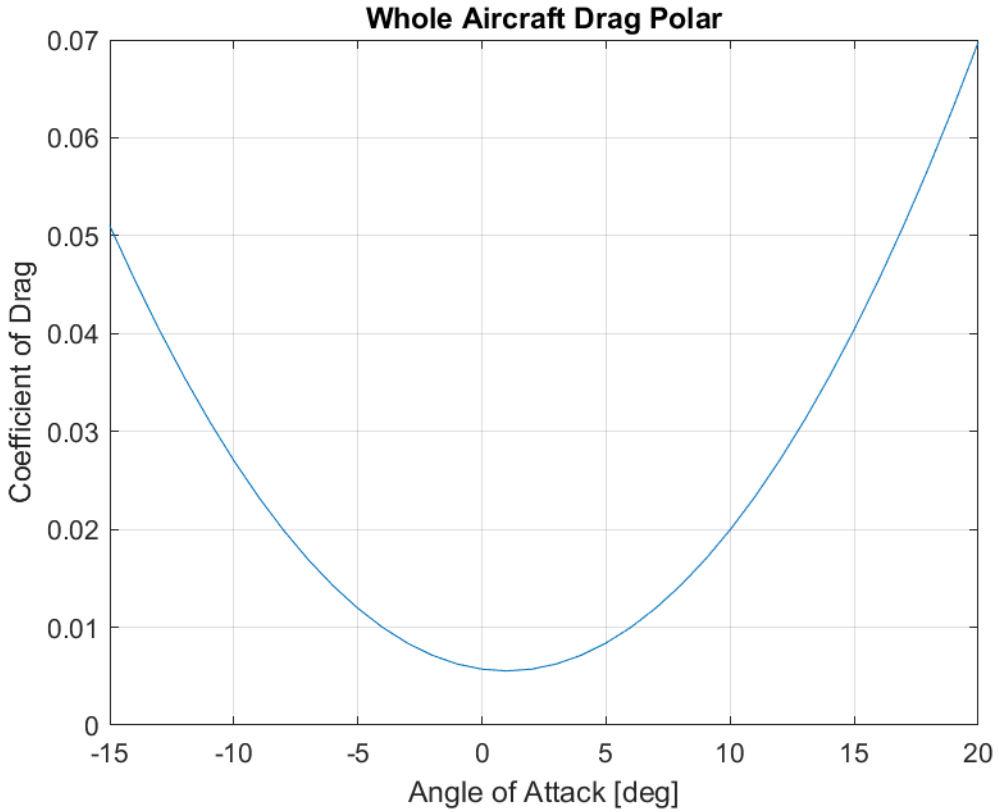
Aircraft Design Geometry and Key Parameters



- Swet = 0.3025 m^2
- Sref = 0.2085 m^2
- AR = 3.885
- Weight = 0.6034 kg

Aircraft Estimated Lift Curve and Whole Aircraft Drag Polar Analysis





Estimated Drag Polar C_D = 0.0120

Aircraft Performance Initial Estimates vs Requirements

Table 1. Summary of Glider Prototype Requirements

(7 m launch height, 1.5 km Standard Atmosphere)

System Requirements	Threshold	Objective	Min or Max	MY DESIGN
Max Glide Range (meters)	70 m	100 m	Max	155 m
Max Glide Range Velocity (meters/second)	12 m/s	7 m/s	Min	4.54 m/s
Max Glide Endurance (seconds)	7 sec	10 sec	Max	22.2 s
Maximum Wingspan (meters)	1.0 m	N/A	Max	0.9 m
Unit Cost (Fake dollars) using the formula: Empty Weight (in grams) * $1 = Cost	No “limit”, but will be used as a discriminator between designs.		Min	$603.39