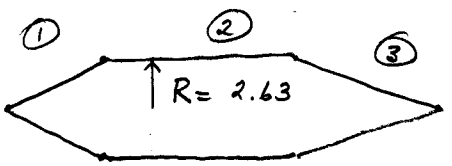
3.4 Wetted areas

Wing: Subscript "e" means exposed

$$S_{We} = \cancel{2}\ \frac{b_e}{2}\left(\frac{c_{re} + c_{te}}{\cancel{2}}\right) = (13.3)(8.05 + 4.90) = 172\ ft^2$$

$$S_{wet_W} = 2\ S_{We} = 344\ ft^2$$

Body:



| 9.8 | 13.7 | 17.5 |

① $\pi\ 2.63\ \sqrt{2.63^2 + 9.8^2} = 83.8$

② $2\pi\ (2.63)\ 13.7 = 226$

③ $\pi\ 2.63\ \sqrt{2.63^2 + 17.5^2} = 146$

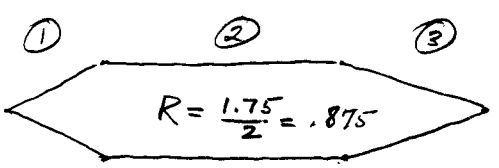
$$S_{wet_B} = 456\ ft^2$$

Horizontal tail: $S_{wet_H} = 2\ S_H = 2(54) = 108\ ft^2$

Vertical tail: $S_{wet_V} = 2\ S_V = 2(37.7) = 75.4\ ft^2$

Nacelle: $S_{wet_N} = 2\pi r l = 6.28\left(\frac{2.30}{2}\right) 7.70 = 55.6\ ft^2$

Tip tank:



| 2.50 | 8.00 | 3.50 |

① $\pi\ .875\ \sqrt{.875^2 + 2.50^2} = 7.28$

3.4 Cont'd

② $2\pi (.875)\, 8.00 = 44.0$

③ $\pi \cdot .875 \sqrt{.875^2 + 3.50^2} = 9.91$

S_{wet_T} 61.2

Total wetted area:

Body	456
Wing	344
HT	108
VT	75.4
2 N	111.2
2 T	122.4
	1217 ft^2