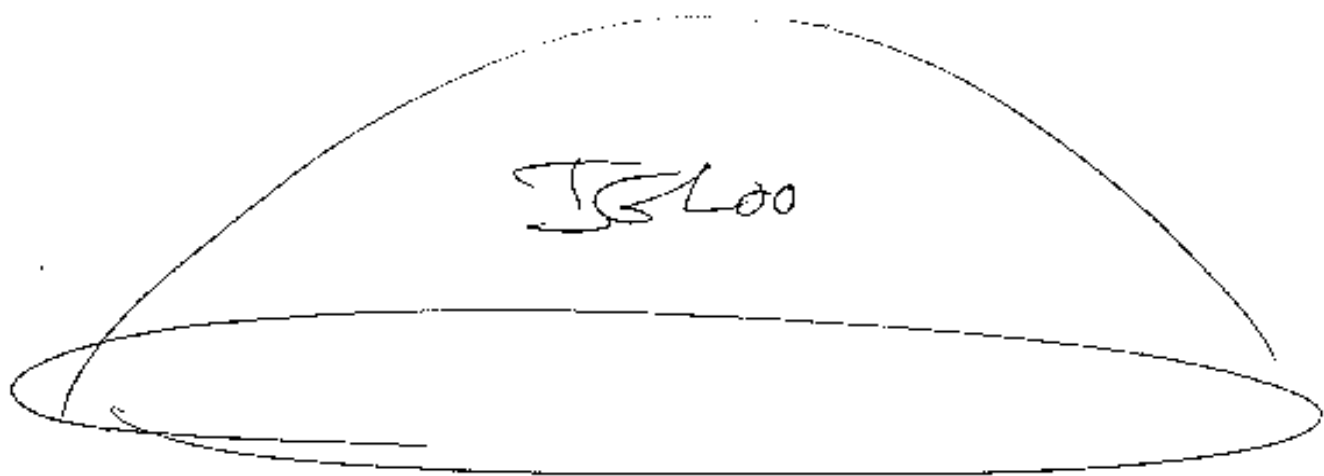




$$S = \frac{100 \times 1000}{3600} = 27.8 \text{ m/s}$$

$$D = 3 \text{ m} \quad R = 1.5 \text{ m}$$

$$\rho = 1.2 \text{ kg/m}^3$$

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} d\theta = \theta \bigg|_{-\frac{\pi}{2}}^{\frac{\pi}{2}} = \pi$$

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos\theta d\theta = \sin\theta \bigg|_{-\frac{\pi}{2}}^{\frac{\pi}{2}} = 2$$

$$A = \frac{\rho s^2}{2} R^2 2 = 2086$$

$$B = \frac{\rho s^2}{2} R^2 \pi = 3277$$

LIFT

$$\int_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \int_0^{\pi} [-\rho R^2 \sin^2 \varphi \cos \theta] d\varphi d\theta$$

$$\int_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \int_0^{+\frac{\pi}{2}} \left[-\frac{\rho S^2}{2} \left[1 - \frac{9}{4} \sin^2 \varphi \right] R^2 \sin^2 \varphi \cos \theta \right] d\varphi d\theta$$

$$+ \int_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \int_{+\frac{\pi}{2}}^{\pi} \left[-\frac{\rho S^2}{2} \left(-\frac{5}{4} \right) R^2 \sin^2 \varphi \cos \theta \right] d\varphi d\theta$$

$$-2086 \left(\frac{\sigma}{2} - \frac{\sin 2\sigma}{4} \right) \Big|_0^{+\frac{\pi}{2}}$$

$$-2086 \left(-\frac{9}{4} \right) \left(\frac{3\sigma}{8} - \frac{\sin 2\sigma}{4} + \frac{\sin 4\sigma}{32} \right) \Big|_0^{+\frac{\pi}{2}}$$

$$-2086 \left(-\frac{5}{4} \right) \left(\frac{\sigma}{2} - \frac{\sin 2\sigma}{4} \right) \Big|_0^{+\frac{\pi}{2}}$$

=

$$-2086 \left(\frac{\pi}{4} \right)$$

$$-2086 \left(-\frac{9}{4} \right) \left(\frac{3 \times \frac{\pi}{2}}{8} \right)$$

$$-2086 \left(-\frac{5}{4} \right) \left(\frac{\pi}{2} - \frac{\pi}{4} \right)$$

$$= -1638 + 2765 + 2048$$

$$= 3175 \text{ N.}$$

DRAE

$$\int_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \int_0^{\pi} \left[+P R^2 \sin \sigma \cos \sigma \right] d\sigma d\theta$$

$$\int_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \int_0^{+\frac{\pi}{2}} \left[+P \frac{S^2}{2} \left[1 - \frac{9}{4} \sin^2 \sigma \right] R^2 \sin \sigma \cos \sigma \right] d\sigma d\theta$$

$$+ \int_{-\frac{\pi}{2}}^{+\frac{\pi}{2}} \int_{+\frac{\pi}{2}}^{\pi} \left[+P \frac{S^2}{2} \left(-\frac{5}{4} \right) R^2 \sin \sigma \cos \sigma \right] d\sigma d\theta$$

$$+3277 \left(\frac{\sin^2 \theta}{2} \right) \Big|_0^{+\frac{\pi}{2}}$$

$$+3277 \left(-\frac{9}{4} \right) \left(\frac{\sin^4 \theta}{4} \right) \Big|_0^{+\frac{\pi}{2}}$$

$$+3277 \left(-\frac{5}{4} \right) \left(\frac{\sin^2 \theta}{2} \right) \Big|_{+\frac{\pi}{2}}^{+\pi}$$

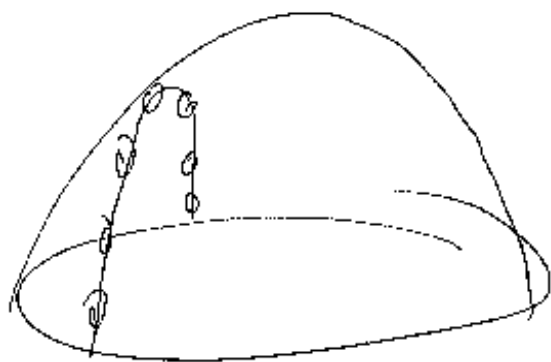
$$+3277 \left(\frac{1}{2} \right)$$

$$+3277 \left(-\frac{9}{4} \right) \left(\frac{1}{4} \right)$$

$$+3277 \left(-\frac{5}{4} \right) \left(-\frac{1}{2} \right)$$

$$+1639 - 1843 + 2049$$

$$= 1844 \text{ N}$$



$$V_{ENT} = -U_{RT}$$

$$\frac{\rho S^2}{2} \left(1 - \frac{9}{4} \sin^2 \vartheta_V\right) \pi R^2 = -3175$$

$$\begin{aligned} \sin^2 \vartheta_V &= \left(\frac{3175}{\frac{\rho S^2}{2} \pi R^2} + 1 \right) \frac{4}{9} \\ &= 0.875 \end{aligned}$$

$$\sin \vartheta_V = 0.923$$

$$\vartheta_V = 69.3^\circ$$

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```
1  %
2  %      LIFT AND DRAG ON IGLOO
3  %
4  -      PI=3.14159; DENSITY=1.2;
5  -      SPEED=100.0/3.6; RADIUS=1.5;
6  -      NIT=60; MIT=31; DELS=PI/NIT;
7  -      DYNAMIC=DENSITY/2.0*SPEED^2;
8  %
9  -      LIFT=0.0;
10 -      DRAG=0.0;
11 -      SIGMA=DELS/2;
12 -      for IT=1:NIT
13 -      PRESSURE=DYNAMIC*(-5.0/4.0);
14 -      if(IT<MIT)    PRESSURE=DYNAMIC ...
15 -          *(1.0-9.0/4.0*sin(SIGMA)^2); end;
16 -      LIFT=LIFT-2.0*PRESSURE*RADIUS^2 ...
17 -          *sin(SIGMA)^2*DELS;
18 -      DRAG=DRAG+PI*PRESSURE*RADIUS^2 ...
19 -          *sin(SIGMA)*cos(SIGMA)*DELS;
20 -      SIGMA=SIGMA+DELS;
21 -      end
22 -      LIFTONIGLOO=LIFT
23 -      DRAGONIGLOO=DRAG
```

script

Ln 23

Col 23

OVR



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Shortcuts How to Add What's New

>>

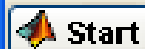
LIFTONIGLOO =

3.1702e+003

DRAGONIGLOO =

1.8416e+003

>>



OVR

