

1. Largest area: 4; Dimensions: $2\sqrt{2}$ by $\sqrt{2}$
2. Largest area: 80000 m^2 ; Dimensions: 200 m by 400 m
3. $\left(\sqrt{\frac{3}{2}}, \frac{5}{2}\right)$ and $\left(-\sqrt{\frac{3}{2}}, \frac{5}{2}\right)$
4. $\left(\frac{1}{2}, \sqrt{\frac{1}{2}}\right)$ and $\left(\frac{1}{2}, -\sqrt{\frac{1}{2}}\right)$
5. 2 ft by 2 ft by $1\frac{1}{4}$ ft
6. Base: $5\sqrt{3}$; Height: $\frac{15}{2}$
7. $12\pi\sqrt{3}$
8. $\frac{16\pi}{9} \text{ cm}^3$