2. $A = \frac{1}{2} b^2 \frac{\sin\theta \sin\varphi}{\sin(\theta+\varphi)}$

$\theta = 30°$
$\varphi = 45°$
$b = 4\,cm$

My HP-25 app gives

$A = 2.93\ cm^2$

3. The Owner's Handbook recommends starting with the "innermost" quantity first. I guess I'll start with $\theta+\varphi$.

3	
0	
ENTER	
4	
5	
+	75
f sin	0.97
g 1/x	1.04
3	
0	
f sin	
×	0.52
4	
5	
f sin	
×	0.37
4	
g x²	16
×	5.86
2	
÷	2.93

4. and 5. Were problems of your choice. In class I showed two formulae for the volume of the upper reservoir.