

① Find the length of the curve  
 $x = t^3 - t$ ,  $y = t^4 - t$ ,  $z = t^5 - t$   
from  $t=0$  to  $t=1$ , to at least  
six significant figures of accuracy.

② Find an exact formula for the  
length of the curve  
 $r = 5$ ,  $\theta = 3t$ ,  $z = 2t$ ,  $0 \leq t \leq 4\pi$ .  
Hint:  $\cos^2 + \sin^2 = 1$