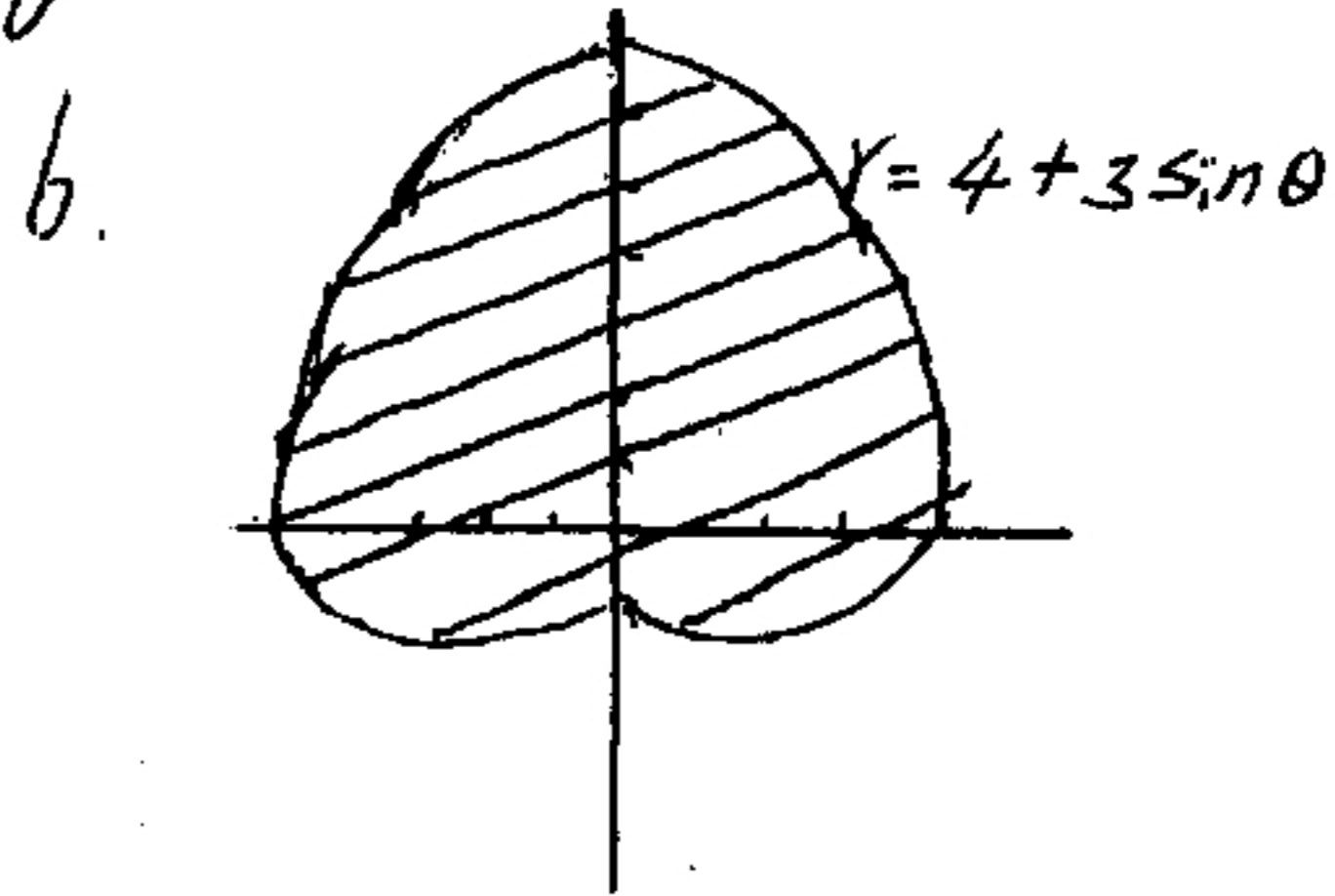
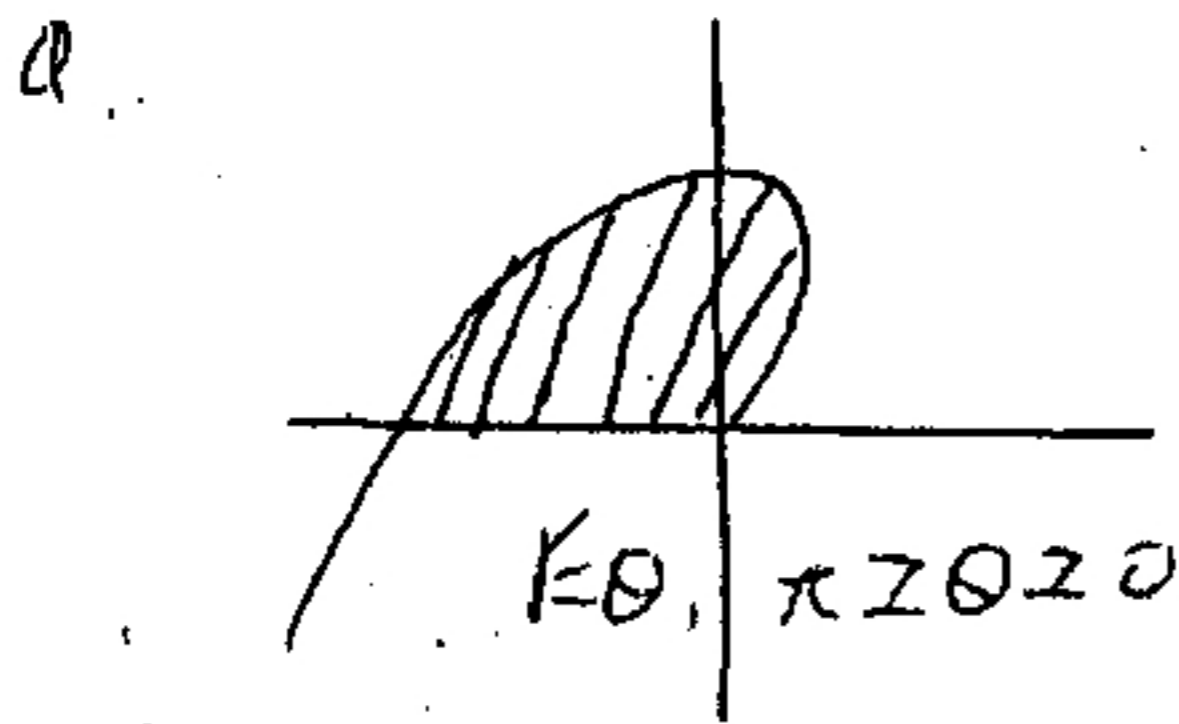


考試科目	微積分	所別	資管系 4161	考試時間	3月16日 星期日 第3節
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1. Find the derivative. (20%)

(a)  $y = \sin \theta \tan \theta$       (b)  $y = \theta \cos \theta - \cot \theta$

2. Find the area of the shaded region (20%)



3. Use multiplication of power series to find the first three nonzero terms in the Maclaurin series for each function. (20%)

a.  $e^{-x^2} \cos x =$

b.  $\frac{x}{\sin x} =$

4. Find the length of one circle of the cycloid  $x = r(\theta - \sin \theta)$ ,  
 $y = r(1 - \cos \theta)$  (20%)

5. Use spherical coordinates to find the volume of the solid that lies above the cone  $z = \sqrt{x^2 + y^2}$  and below the sphere  $x^2 + y^2 + z^2 = z$  (20%)

