5-001 Mid-Term Assignment on Page 20. Let  $TU(\theta) = \frac{1}{c} \exp(-\frac{1}{2}(0 + \cos 0)^2)$  where  $C = \left[e^{-\frac{1}{2}(0 + \cos 0)^2}\right]$  $\log(\pi(0)) = \log(t) + \log(\exp(-\frac{1}{2}(0 + \cos 0)^{2}) = -\log(c - \frac{1}{2}(0 + \cos 0)^{2}), m = 0.$ FOR SIL  $[log(\pi(0))]' = -(0+\cos\theta) \cdot (1+(-\sin\theta)) = -(0+\cos\theta)(1-\sin\theta)$  $[lop(\pi(9))]'' = -[(l-sin9)^2 + (otcos9) (cos9)] = -(l-sin9)^2 + cos9(0+cos9)$  $[19P(\pi(0))]' = -1+1=0.$ Since we have that  $[log(\pi(0))]''|_{\theta=0}=0$ , we choose another  $\theta$  by setting that  $[log(\pi(0))]'=0$   $\Leftrightarrow -(0+\cos\theta)(l-\sin\theta)=0 \Leftrightarrow \theta_1=\frac{\pi}{2}, \theta_2\approx 0.739$ , since when  $\theta_1=\frac{\pi}{2}[log(\pi(0))]''|_{\theta=\pi}=0$ , we choose.  $\theta=\theta_2\approx -0.739. : [log(\pi(0))]''|_{\theta=-0.739}=-(l-\sin(-0.739))^2\approx -2.8$ : Tale) Lexpl-1.4(0+0.739)2) 120 findy =- (1+ sin(0.739))2 1. density.