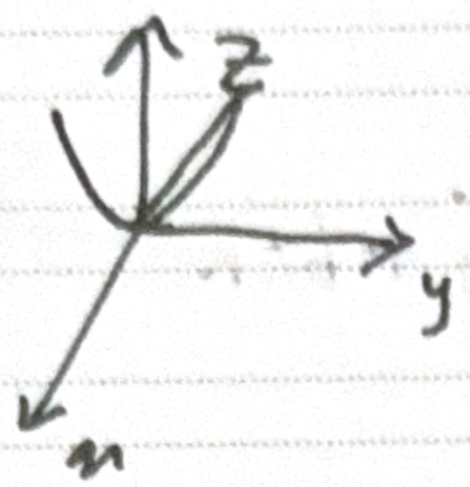
Subject: Session 74

Year. Month. Date. ( )

1.

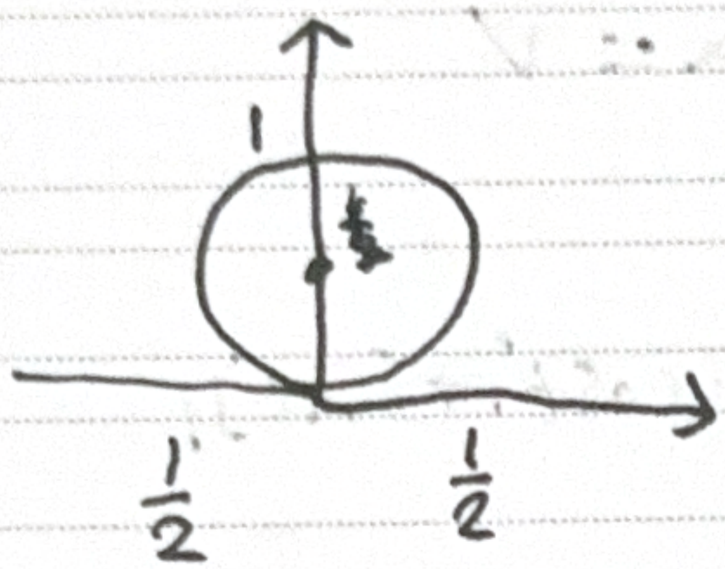


$x^2+y^2 \leq y$

$r^2 \leq r\sin\theta$

$r \leq \sin\theta$

$\int_0^{\pi} \int_0^{\sin\theta} \int_{r^2} r\,dz\,dr\,d\theta$



2. $x^2+y^2+z^2 = 4$

$z^2 = 4-(x^2+y^2)$

$$\frac{1}{m}\int_0^{2\pi}\int_0^{2}\int_0^{\sqrt{4-r^2}} zr\,dz\,dr\,d\theta \qquad m =$$

inner: $\int_0^{\sqrt{4-r^2}} (4-r^2)r = \int 4r^2 - r^4 =$

middle: $\int_0^{2} 4r^2 - r^4 = \frac{4}{3}r^3 - \frac{r^5}{4}\Big|_0^2 =$