Discussed Errors on TEST #1. Returned several Notebooks.

**New Activity for TODAY.** (§ 3.7: p. 878)

**A.** #10

Rect $\rightarrow$ Cylindrical

$(3, 3, -2) \rightarrow (r, \theta, z)$

**Solution**

$r = \rho \cos \theta$

$z = z$

$tan \theta = \frac{\rho}{z}$

$r^2 = 3^2 + 3^2 = 18$

$r = \sqrt{18} = 3\sqrt{2}$

$z = -2$

$\theta = \frac{\pi}{4}$

$(3\sqrt{2}, \frac{\pi}{4}, -2)_{cyl}$

**B.** #30

Spherical $\rightarrow$ Cylindrical

$(4, \frac{\pi}{4}, \frac{\pi}{3}) \rightarrow ?$

**Solution**

$r = \rho \sin \phi \cos \theta$

$\frac{\rho}{sin \phi} = \frac{4}{\sin \frac{\pi}{3}} \Rightarrow \rho = \frac{8}{\sqrt{3}}$

$\theta = \frac{\pi}{4}$

$r = \rho \cos \phi$

$z = \rho \sin \phi$

$\rho = \sqrt{r^2 + z^2}$

This surface is a plane parallel to the xy plane and 2 units above it.