

$$F = ma$$

$$T - W = ma$$

5 pts

$$T = W + ma = 2,010 \cdot 9.8 + 2,010 \cdot 1.5$$

$$= 2,010 \cdot [9.8 + 1.5] = 2,010 \cdot 11.3$$

$$\boxed{22,713 \text{ N}}$$

5 pts

10) $F = \frac{GMm}{r^2}$ 5 pts

$$W = \frac{GMm}{R_E^2}$$

$$F = \frac{1}{2} \frac{GMm}{R_E^2} = \frac{GMm}{r^2}$$

5 pts

$$\frac{1}{2R_E^2} = \frac{1}{r^2}$$

$$\boxed{r = \sqrt{2} R_E}$$

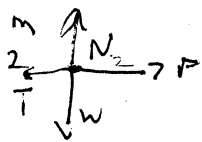
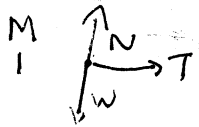
4 pts

$$\boxed{r = \sqrt{2} R_E - R_E}$$

1 pt

$$r = 1,600 \text{ km}$$

11) FBD



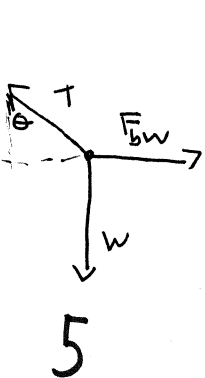
$$\sum F_x = T = Ma$$

$$F - T = ma$$

$$F = (M+m)a$$

$$T = \frac{M}{M+m} F$$

12) FBD



$$\sum F = ma = 0$$

$$\sum F_x = F_w - T_x = 0$$

$$\sum F_y = T_y - W = 0$$

5

5

$$T_y = T \cos \theta$$

$$T \cos \theta = W = mg$$

$$\boxed{T = \frac{mg}{\cos \theta}}$$

5