

then

$$\dot{m} = \frac{1316.3}{\sqrt{T_2}} \frac{\text{kg}}{\text{s}} = \frac{1316.3}{\sqrt{4.383}} \frac{\text{kg}}{\text{s}} = 628.73 \frac{\text{kg}}{\text{s}}$$

and

$$\frac{F}{\dot{m}} = a_0 M_0 \left[\sqrt{\frac{T_2}{T_1}} - 1 \right] = 299.74 \frac{\text{m}}{\text{s}} 3.0 \left[\sqrt{\frac{4.383}{2.8}} - 1 \right]$$

$$\frac{F}{\dot{m}} = 225.83 \frac{\text{m}}{\text{s}}$$

$$F = \left(\frac{F}{\dot{m}} \right) \dot{m} = 225.83 \frac{\text{m}}{\text{s}} 628.73 \frac{\text{kg}}{\text{s}}$$

$$F = 141,986 \text{ N}$$