

32. The additional “apparent weight” experienced during upward acceleration is well treated in Sample Problem 5-8. The discussion in the textbook surrounding Eq. 5-13 is also relevant to this.

(a) When  $\vec{F}_{\text{net}} = 3F - mg = 0$ , we have

$$F = \frac{1}{3}mg = \frac{1}{3}(1400 \text{ kg}) (9.8 \text{ m/s}^2) = 4.6 \times 10^3 \text{ N}$$

for the force exerted by each bolt on the engine.

(b) The force on each bolt now satisfies  $3F - mg = ma$ , which yields

$$F = \frac{1}{3}m(g + a) = \frac{1}{3}(1400)(9.8 + 2.6) = 5.8 \times 10^3 \text{ N} .$$