19. In terms of magnitudes, Newton's second law is $F = ma$, where F represents $|\vec{F}_{\text{net}}|$, a represents $|\vec{a}|$ (which it does not always do; note the use of a in the previous solution), and m is the (always positive) mass. The magnitude of the acceleration can be found using constant acceleration kinematics (Table 2-1). Solving $v = v_0 + at$ for the case where it starts from rest, we have $a = v/t$ (which we interpret in terms of magnitudes, making specification of coordinate directions unnecessary). The velocity is $v = (1600\,\text{km/h})(1000\,\text{m/km})/(3600\,\text{s/h}) = 444\,\text{m/s}$, so

$$F = (500\,\text{kg})\frac{444\,\text{m/s}}{1.8\,\text{s}} = 1.2 \times 10^5\,\text{N} .$$