Name_____

Date_____ **Pd**____

UBF homework 4

Quantitative Net Force with Kinematics

$v_f = at + v_i$ $\Delta x = \frac{1}{2}a\Delta t^2 + v_i\Delta t$ $v_f^2 = v_i^2 + 2a\Delta x$

$F_{net} = ma$ $F_{friction} = \mu F_{normal}$

In the amusement park ride *Mr. Freeze*, riders are uniformly accelerated from rest by magnetic induction motors (produces a magnetic force) along a 70 meter horizontal track in just 5 seconds. While accelerating, friction exerts 500N of force on the train. Then the train coasts through the loops and turns of the remainder of the ride. A train loaded with passengers has a mass of 2500 kg.

Draw a **quantitative** force diagram for the train while accelerating. Show all calculations.