Running code for different cases, a number of issues arise.

M1 = M2 = M3 = 5  
mu1 = mu2 = mu3 = 0  
F = 150  
t = 10  
In this scenario we would expect M3 to neither rise nor fall, since in the frictionless case, the force necessary for that to happen is calculated to be . However the results are calculated incorrectly.

At t = 0 Current positions: M1(5, 7) M2(3, 7) M3(5, 6)

At t = 1 Current positions: M1(-2.5, 7) M2(2.5, 7) M3(0, -7.5)

At t = 2 Current positions: M1(-6, 7) M2(7.5, 7) M3(-1.5, -22.5)

At t = 3 Current positions: M1(-6.5, 7) M2(12.5, 7) M3(-6, -37.5)

At t = 4 Current positions: M1(-4, 7) M2(17.5, 7) M3(-13.5, -52.5)

At t = 5 Current positions: M1(1.5, 7) M2(22.5, 7) M3(-24, -67.5)

At t = 6 Current positions: M1(10, 7) M2(27.5, 7) M3(-37.5, -82.5)

At t = 7 Current positions: M1(21.5, 7) M2(32.5, 7) M3(-54, -97.5)

At t = 8 Current positions: M1(36, 7) M2(37.5, 7) M3(-73.5, -112.5)

At t = 9 Current positions: M1(53.5, 7) M2(42.5, 7) M3(-96, -127.5)

Here M3 is calculated to hit the left side of M1 and fall down. If the number is large like 127 it means that M3 is calculated to hit the bottom of M1. Due to this, M2 is obviously calculated to go right and stop at M0. While M1 is calculated to initially go left and after t3 start moving right.

Let’s consider the scenario where F is zero and all else is the same. We would in this case expect M1 to accelerate to left with the equation

M1 = M2 = M3 = 5  
mu1 = mu2 = mu3 = 0  
F = 0  
t = 10

At t = 0 Current positions: M1(5, 7) M2(3, 7) M3(5, 6)

At t = 1 Current positions: M1(-2.5, 7) M2(2.5, 7) M3(0, -7.5)

At t = 2 Current positions: M1(-7.5, 7) M2(7.5, 7) M3(0, -22.5)

At t = 3 Current positions: M1(-12.5, 7) M2(12.5, 7) M3(0, -37.5)

At t = 4 Current positions: M1(-17.5, 7) M2(17.5, 7) M3(0, -52.5)

At t = 5 Current positions: M1(-22.5, 7) M2(22.5, 7) M3(0, -67.5)

At t = 6 Current positions: M1(-27.5, 7) M2(27.5, 7) M3(0, -82.5)

At t = 7 Current positions: M1(-32.5, 7) M2(32.5, 7) M3(0, -97.5)

At t = 8 Current positions: M1(-37.5, 7) M2(37.5, 7) M3(0, -112.5)

At t = 9 Current positions: M1(-42.5, 7) M2(42.5, 7) M3(0, -127.5)

Here M1’s acceleration is calculated to be around 4m/s which is more than what it should be. M1’s acceleration based on the formula above should be 2m/s. However it is indeed correctly calculated that M1 will start accelerating towards the left. Again, M2 is calculated to hit the left side of M1 and fall while M2 is calculated to go right till M0.

Let’s consider the case with maximum friction for all, but with the force acting in the opposite direction. Also lets consider M1 being the largest mass while M2 > M3. In this case we would expect M3 to rise while M2 goes to the left and M1 goes to the left.

M1 = 10, M2 = 7, M3 = 3  
mu1 = mu2 = mu3 = 0.5  
F = -30  
t = 10

At t = 0 Current positions: M1(5, 7) M2(3, 7) M3(5, 6)

At t = 1 Current positions: M1(-1.05, 7) M2(1.5, 7) M3(0, -6.5)

At t = 2 Current positions: M1(-3.3, 7) M2(4.5, 7) M3(0.5, -19.5)

At t = 3 Current positions: M1(-5.85, 7) M2(7.5, 7) M3(2, -32.5)

At t = 4 Current positions: M1(-8.7, 7) M2(10.5, 7) M3(4.5, -45.5)

At t = 5 Current positions: M1(-11.85, 7) M2(13.5, 7) M3(8, -58.5)

At t = 6 Current positions: M1(-15.3, 7) M2(16.5, 7) M3(12.5, -71.5)

At t = 7 Current positions: M1(-19.05, 7) M2(19.5, 7) M3(18, -84.5)

At t = 8 Current positions: M1(-23.1, 7) M2(22.5, 7) M3(24.5, -97.5)

At t = 9 Current positions: M1(-27.45, 7) M2(25.5, 7) M3(32, -110.5)

Again there are issues. While M1 is correctly calculated to immediately go to the left, M2 here goes to the right while M3 falls.