

Projectile motion analysis with Tracker (27 pts)

- Seven graphs (14 pts)

1a. The motion in the x-dimension is constant velocity. This, incidentally, implies a constant acceleration of zero. (1 pt)

1b. As with the rolling cart analysis, the x-position graph has a constant positive slope, the x-velocity graph has a constant positive value, and the x-acceleration graph has a constant value of zero. (2 pts)

2a. The motion in the y-dimension is constant acceleration. (1 pt)

2b. As with the softball thrown straight upwards into the air, the y-position graph is an inverted parabola, the y-velocity graph is a straight line tilted downward that crosses through the x-axis, and the y-accelerations graph is a constant value of about -10m/s^2 . (2 pts)

3. (7 pts)

a. x-position vs. time would be steeper

b. x-velocity vs. time would have a higher, constant value

c. x-acceleration vs. time would remain zero

d. y-position vs. time would have a greater height

e. y-velocity vs. time would begin at a higher positive value, but have the same slope

f. y-acceleration vs. time would remain a constant value of -10m/s^2

g. y-position vs. x-position would have a greater height