
The exam is worth 100 points. Some of the equations are given below.

1 dimensional kinematic Equations:

$$v_f = v_i + at$$

$$v_f^2 = v_i^2 + 2a(x_f - x_i)$$

$$x_f = x_i + v_i t + \frac{1}{2} a_x t^2$$

$$x_f = x_i + \left(\frac{1}{2}\right)(v_f + v_i)t$$

Projectile Motion

$$v_{ix} = v_i \cos \theta$$

$$v_{fy} = v_{iy} + a_y t$$

$$v_{fy}^2 = v_{iy}^2 + 2a_y(y_f - y_i)$$

$$y_f = y_i + v_{iy} t + \left(\frac{1}{2}\right) a_y t^2$$

$$y_f = y_i + \left(\frac{1}{2}\right)(v_{fy} + v_{iy})t$$

$$v_{fy} = v_i \sin \theta$$

$$v_{fx} = v_{ix}$$

$$x_f = x_i + v_{ix} t$$

Newtons Law

$$\Sigma F_x = ma_x$$

$$\Sigma F_y = ma_y$$

Centripetal/ radial acceleration $a_c = v^2/r$

$$\mathbf{A} = A_x \mathbf{i} + A_y \mathbf{j}$$

$$|\mathbf{A}| = \sqrt{A_x^2 + A_y^2}$$

$$\tan(\theta) = A_y / A_x$$