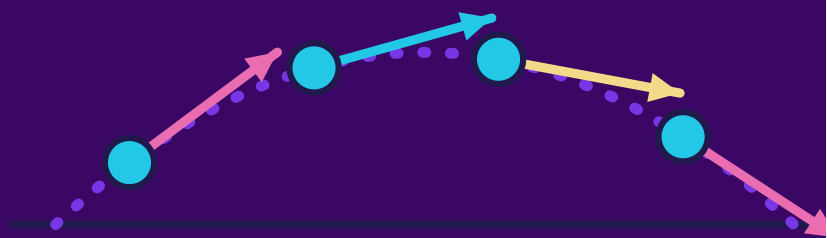


Kinematics



**Constant
acceleration** **B**

$$v = u + at, \quad s = ut + \frac{1}{2}at^2, \quad s = vt - \frac{1}{2}at^2, \\ s = \frac{1}{2}(u + v)t, \quad v^2 = u^2 + 2as$$

... in vectors **B**

$$\mathbf{v} = \mathbf{u} + \mathbf{a}t, \quad \mathbf{r} = \mathbf{u}t + \frac{1}{2}\mathbf{a}t^2$$

**Variable
acceleration**

$$v = \frac{dr}{dt}, \quad a = \frac{dv}{dt} = \frac{d^2r}{dt^2}, \quad r = \int v dt, \quad v = \int a dt$$

**Projectiles (speed
 U , angle α)**

$$x = Ut \cos \alpha, \quad y = Ut \sin \alpha - \frac{1}{2}gt^2$$

B given in the exam. Learn the rest.