Flipping Physics Lecture Notes:

Using the R Position Vector to find Velocity and Acceleration
http://www.flippingphysics.com/r-position-velocity-acceleration.html

The position of an object is described by $\vec{r} = \left[\left(2.5t\right)\hat{i} + \left(2.5t - 4.9t^2\right)\hat{j}\right]m$.
Determine the velocity and acceleration of this object.

Velocity is the derivative of position as a function of time.

$$\vec{v} = \frac{d\vec{r}}{dt} = \frac{d}{dt}\left[\left(2.5t\right)\hat{i} + \left(2.5t - 4.9t^2\right)\hat{j}\right] = \left[2.5\hat{i} + \left(2.5 - 9.8t\right)\hat{j}\right]\frac{m}{s}$$

Acceleration is the derivative of velocity as a function of time.

$$\vec{a} = \frac{d^2\vec{r}}{dt^2} = \frac{d\vec{v}}{dt} = \frac{d}{dt}\left[2.5\hat{i} + \left(2.5 - 9.8t\right)\hat{j}\right] = \left[-9.8\hat{j}\right]\frac{m}{s^2}$$

We can now determine the object's position, velocity, and acceleration at any time t. All we have to do is substitute that time t into each equation. However, notice the acceleration of the object does not change as a function of time because this object is in uniformly accelerated motion; the acceleration is constant. We should have known this from the start because the highest exponent in the position vector is 2 and if the highest exponent in the position vector is 2 or less, the object is in uniformly accelerated motion.

Also, look at what we can identify when we rearrange the position vector:

$$\vec{r} = \left[\left(2.5t\right)\hat{i} + \left(2.5t - 4.9t^2\right)\hat{j}\right]m = \left[0 + \left(2.5\hat{i} + 2.5\hat{j}\right)t + \left(-4.9\hat{j}\right)t^2\right]m$$

Compare that to one of the Uniformly Accelerated Motion equations:

$$\vec{r} = \vec{r}_0 + \vec{v}_0 t + \frac{1}{2}\vec{a}t^2$$

You can see the initial position of the object was zero. $\vec{r}_0 = 0$

The initial velocity of the object is $\vec{v}_0 = \left[2.5\hat{i} + 2.5\hat{j}\right]\frac{m}{s}$

And we can determine the acceleration of the object: $\frac{1}{2}\vec{a} = -4.9\hat{j} \Rightarrow \vec{a} = -9.8\hat{j}\frac{m}{s^2}$

This is an object in projectile motion with an acceleration in the j or y-direction of -9.8 m/s^2 and a constant velocity in the i or x-direction of 2.5 m/s.