## Creative Coding 1

## P5.js Lab 3

## Pointing an object in the Direction of Movement

**Note:** use the properties and functions of the ArrowUpdated class (in my folder).

In lab 1, we rotated an arrow object towards the mouse.

In lab 2, we moved Ball objects around the canvas. In this case we didn’t have to worry about rotation as rotating a circle doesn’t make any difference visually – it looks exactly the same regardless of how it’s rotated. However if we want to move a non-circular object, we more than likely want it to ‘point in the direction of movement’ - i.e. ‘rotate according to the velocity vector’.

We know that velocity is a vector with an x and a y component (in 2 dimensions) – vx and vy. We can find vx and vy using the trigonometric ratios. See ‘lab #2 Q2’ and ‘lecture (velocity and js intro)’.

So we can find the vx and vy. However, to rotate an object we need the angle.

Now to find the angle we use tan(angle) = vy/vx

OR (taking arctan of both sides):

angle = arctan((vy/vx)

***USING THE FACT THAT if tan(a) = b then a = arctan(b)***

What is the above equation in P5.js ? See Lab #1.

**Question:**

Write a script which moves an ArrowUpdated object along the x and y axes simultaneously, given the speed = 4, and direction = 60 degrees. Make sure that it is pointing in the direction of movement.