

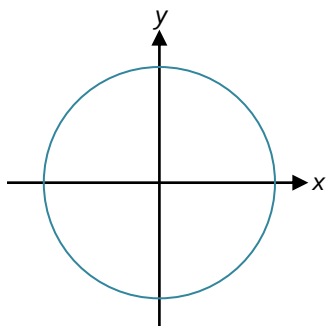


Name: \_\_\_\_\_

Class: \_\_\_\_\_ ( )

Date: \_\_\_\_\_

Let's recall how  $\sin \theta$  and  $\cos \theta$  are defined on the unit circle.



$\sin \theta$  is defined as the \_\_\_\_\_ of the point on the unit circle.

$\cos \theta$  is defined as the \_\_\_\_\_ of the point on the unit circle.

### Task 1 – Shoot a “cosine” angle!

Aim:

Select an angle between  $0^\circ$  and  $360^\circ$ . The radius of the unit circle will rotate by the selected angle and a ball will be shot *vertically*. If the ball hits the target (a dot on the horizontal axis), you win!

Instruction:

1. Scan the QR code which links to a Geogebra app.



1. Enter the target (a value on the  $x$ -axis) in the box  $s =$

2. Enter an angle in the box  $r_1 =$   such that the ball will hit the target on the  $x$ -axis.

3. If there are any other angle that will make the ball hit the target, enter your selected angle in the box  $r_2 =$

4. Record the angles that hit the targets in the table below. Also, sketch the angle on the coordinate plane.

Target	Angle(s)
0.5	
0.6	
0.2	

Target	Angle(s)
-0.5	
-0.6	
-0.2	

## Observation

(i) Study the angles by column, what do you observe?

If the target is **positive**, \_\_\_\_\_.

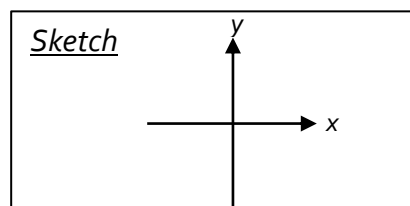
If the target is **negative**, \_\_\_\_\_.

(ii) Study the angles by row, what do you observe? Are the angles on each row related?

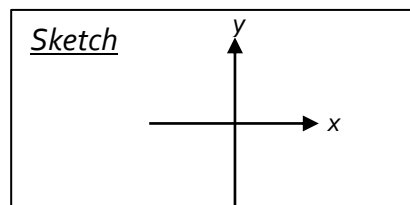
## Practice 1

For each of the following equation, consider which quadrant(s) the angle  $\theta$  lies. Sketch the angles in the boxes below and solve the equation.

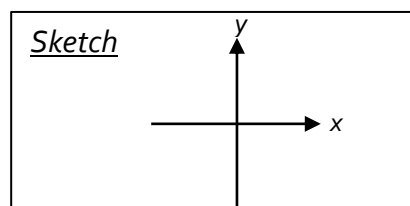
1.  $\cos \theta = 0.3$



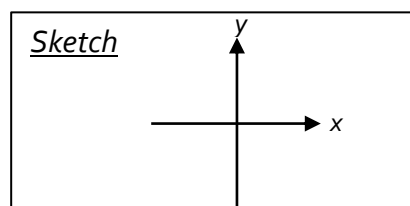
2.  $\cos \theta = -0.3$



3.  $\cos \phi = 0.92$



4.  $\cos \phi = -0.92$



\*Solve the following equations:

(a)  $\cos \theta = 0$

(b)  $\cos \theta = 1$

(c)  $\cos \theta = -1$

(d)  $\cos \theta = 2$

# Learning aids

