Task 2 – Shoot a "sine" angle!

Aim:

Select an angle between 0° and 360°. The radius of the unit circle will rotate by the selected angle and a ball will be shot *horizontally*. If the ball hits the target (a dot on the vertical axis), you win!

Instruction:

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

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

2. Enter an angle in the box $r_1 =$ ☐ such that the ball will hit the target on the y-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	
0.3	
0.8	

Target	Angle(s)
–0.5	
–0.3	
–0.8	

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?

Concept Check
For each of the following equation, consider which quadrant(s) the angle θ lies. Sketch the angles in the boxes below and solve the equation.

1. $\sin\theta = 0.7$

Sketch

2. $\sin\theta = -0.7$

Sketch

3. $\sin\phi = 0.25$

Sketch

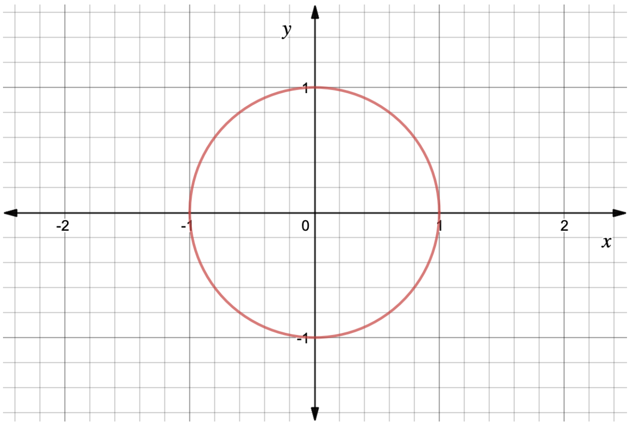
4. $\sin\phi = -0.25$

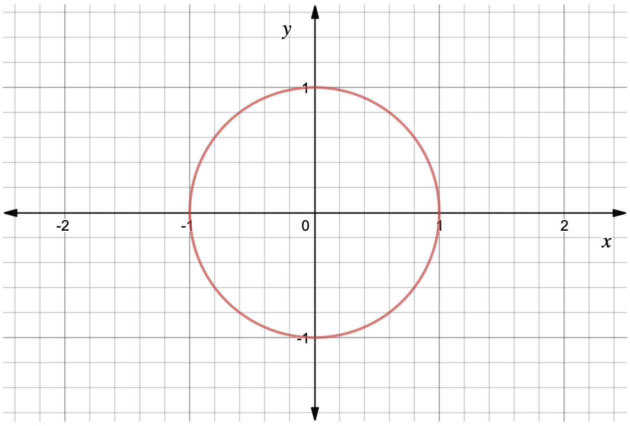
Sketch

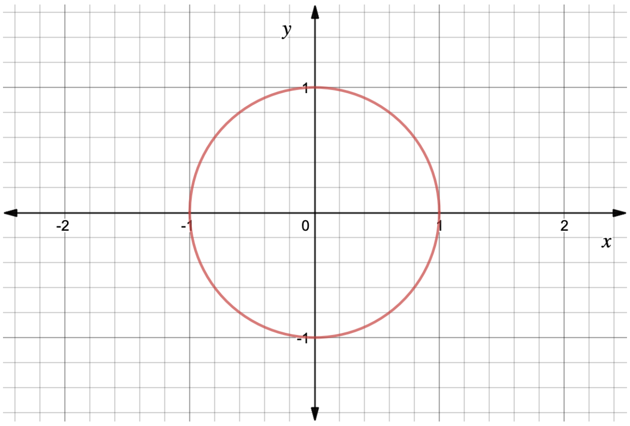
*Solve the following eqautions:

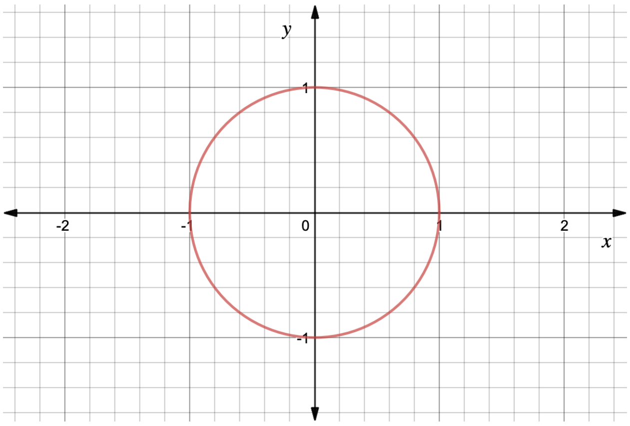
(a) $\sin\theta = 1$ (b) $\sin\theta = 0$ (c) $\sin\theta = -1$ (d) $\sin\theta = -2$

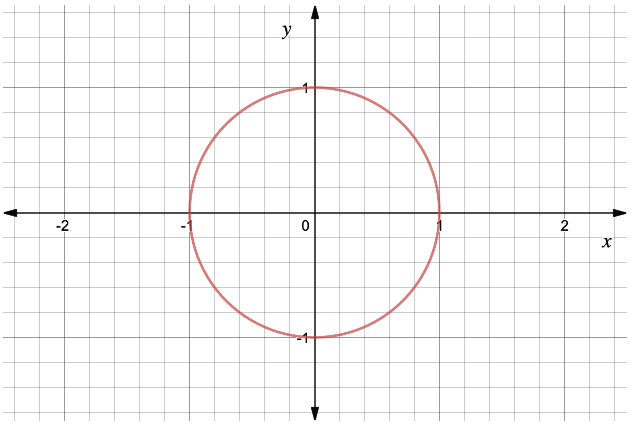
Learning aids

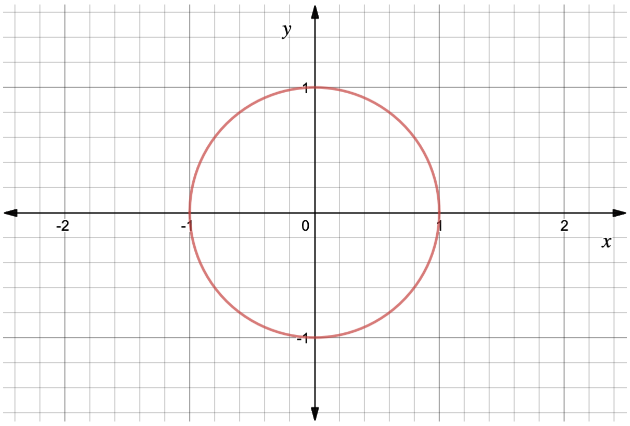


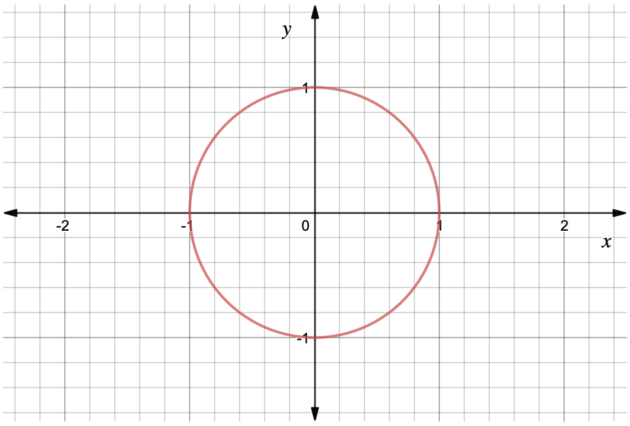


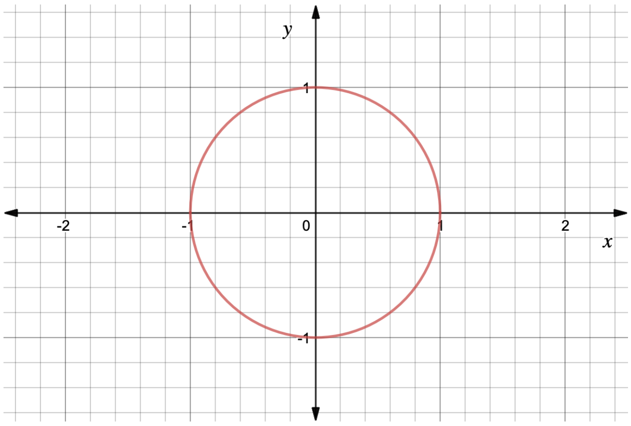


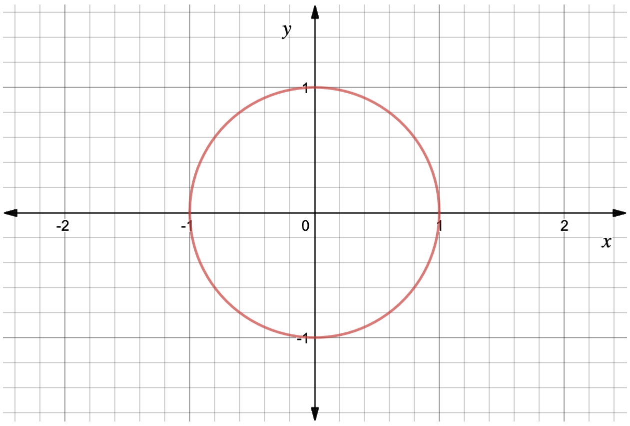


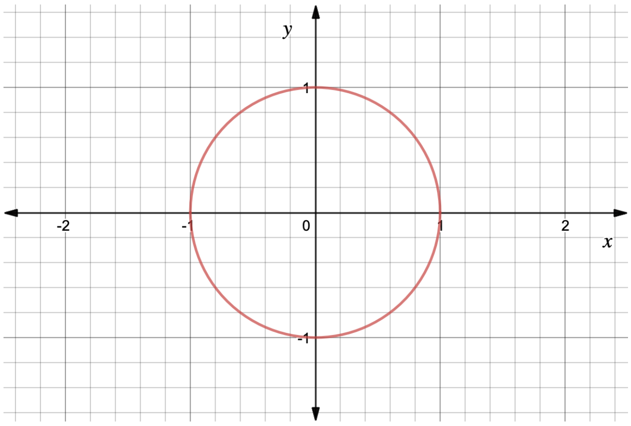





y
1
-2
-1
0
1
2
x
-1


y
1
-2
-1
0
1
2
x
-1


y
1
-2
-1
0
1
2
x
-1


y
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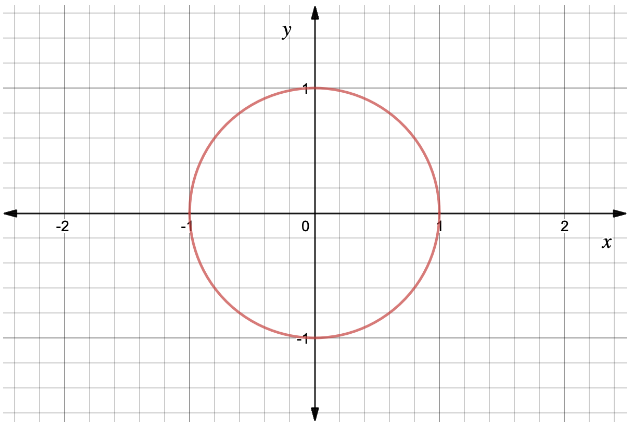
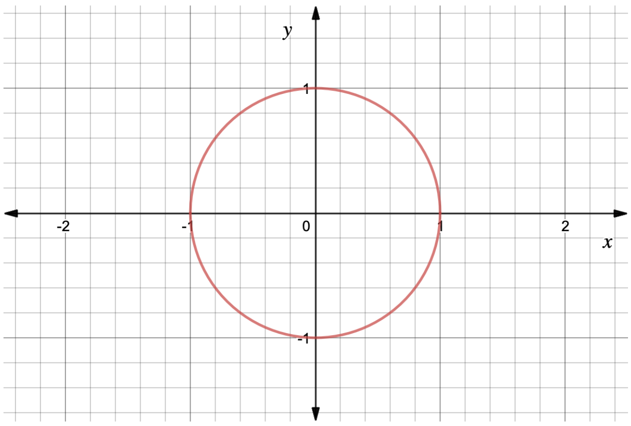
-2
-1
0
1
2
x
-1


y
1
-2
-1
0
1
2
x
-1


y
1
-2
-1
0
1
2
x
-1