What's Going On?

Checking In

Minds on Properties of sin and cos

Action! Desmos Investigation!

Consolidation Coordinates of a Point

Learning Goal - I will investigate, and understand, the properties of sinusoidal functions.

Minds on

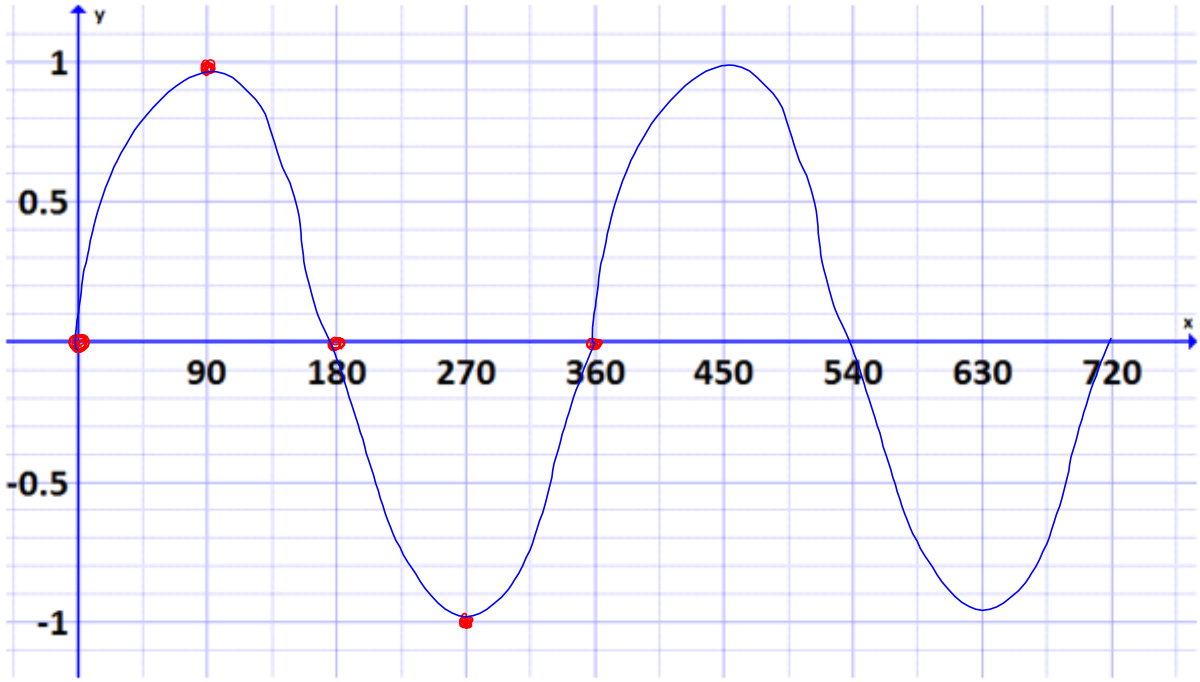
Sinusoidal Functions

A sinusoidal function is a periodic function whose graph looks like smooth symmetrical waves, where any portion of the wave can be horizontally translated onto another portion of the curve; graphs of sinusoidal functions can be created by transforming the graph of the function **y = sin x** or **y = cos x**.

Minds on

Properties of sin(θ) and cos(θ)

$$f(x) = \sin x$$



- The period is 360°
- The equation of the axis is $y = 0$
- The amplitude is 1

  The max value is 1

  The min value is -1
- The domain is { $x \in \mathbb{R}$ }
- The range is { $-1 \leq y \leq 1$ }
- The zeroes are located at 0, 180, 360, . . .

Minds on

Properties of sin(θ) and cos(θ)

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- The equation of the axis is $y = 0$
- The amplitude is 1

  The max value is 1

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- The domain is { $x \in \mathbb{R}$ }
- The range is { $-1 \leq y \leq 1$ }
- The zeroes are located at 90°, 270°, 450°, ...

Action!

Desmos Investigation

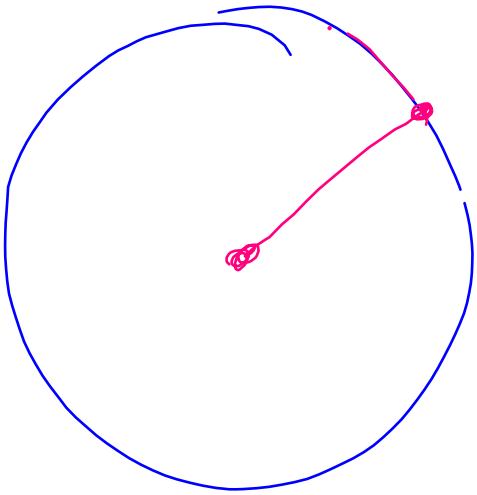
$C = 2\pi r$

$2(180)$

$360(r)$

$\frac{3\pi}{2}$

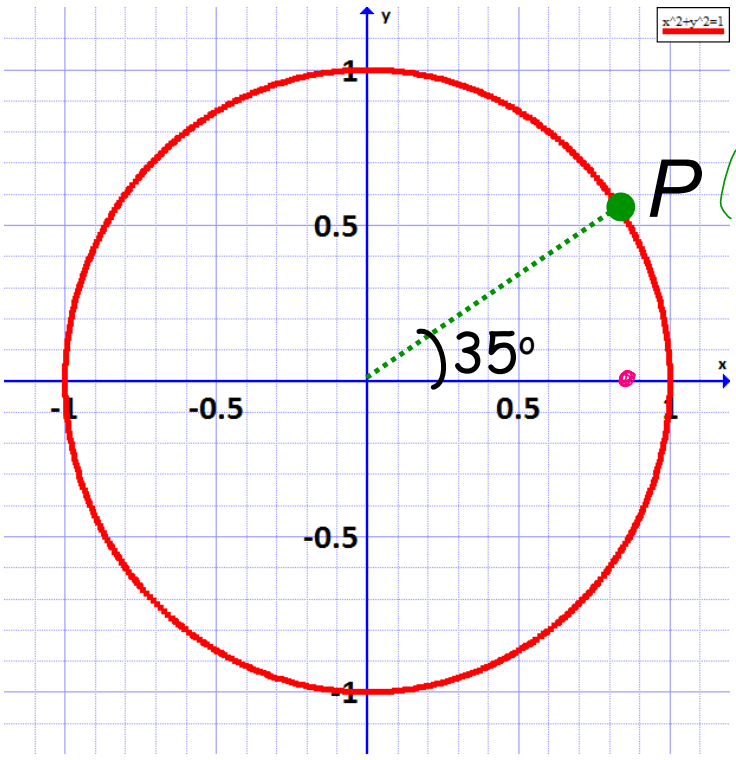
$1.5(180)$



Consolidation

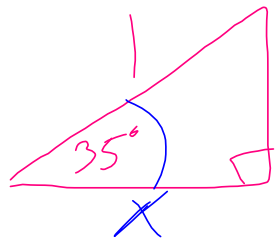
Coordinates of a Point

Determine the exact coordinates of the given point *P*(x, y).



$P(\cos 35°, \sin 35°)$

$(0.819, 0.573)$



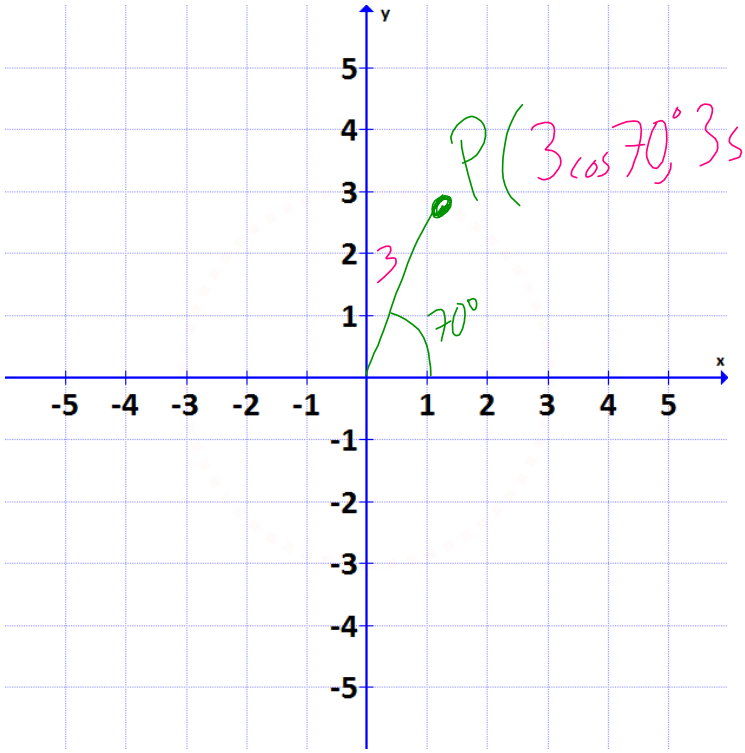
1 ah

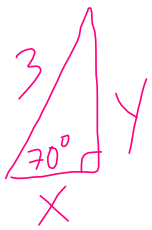
$\cos 35° = \frac{x}{1}$

Consolidation

Coordinates of a Point

Determine the coordinates of the point *P*(x, y) resulting from a rotation of 70 degrees centred at the origin and starting from the point (3, 0).





$\cos 70° = \frac{x}{3}$

$x = 3\cos 70°$

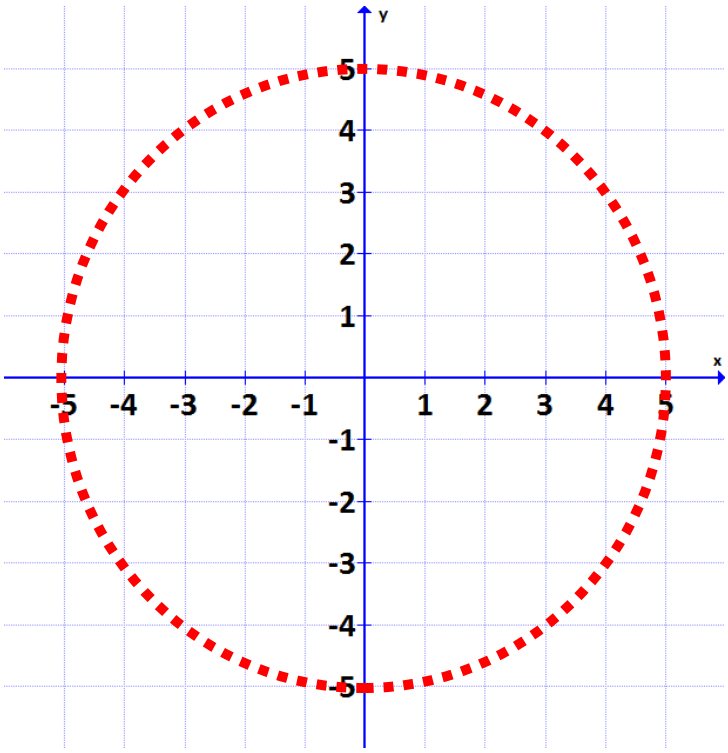
$\sin 70° = \frac{y}{3}$

$y = 3\sin 70°$

Consolidation

Coordinates of a Point

Any point $P(x, y)$ on a circle centred at (0,0) with radius r and rotated through an angle θ can be expressed as an ordered pair $(r\cos\theta, r\sin\theta)$.



Find the coordinates of each point.