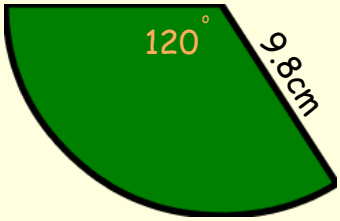
Starter

1) Simplify the surd $\sqrt{98}$

2) What is the arc length and area of the sector shown?



CAST Diagram

Today we are learning...

How to draw and use the CAST diagram to solve trig equations.

I will know if I have been successful if...

I know how to draw the CAST diagram.

I can identify which quadrants to use.

I can solve to find the required values of theta.

Examples

1) sin(x) = 0.4 for 0 < x < 360

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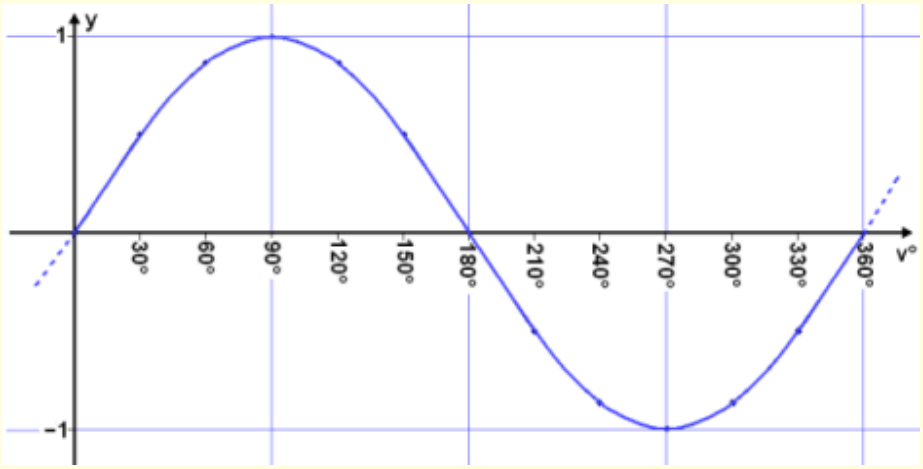
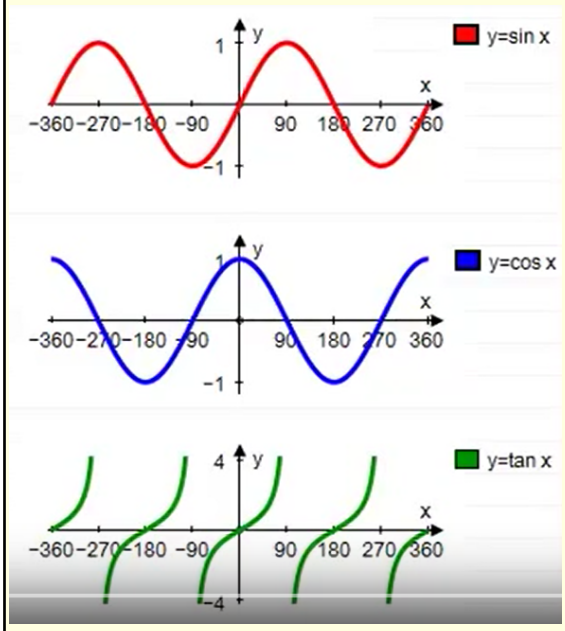
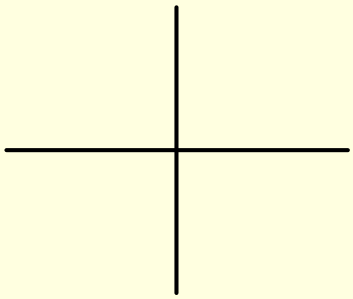


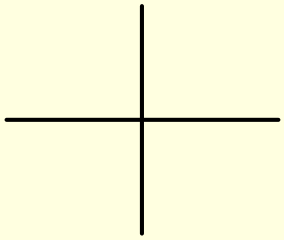
Drawing the CAST Diagram





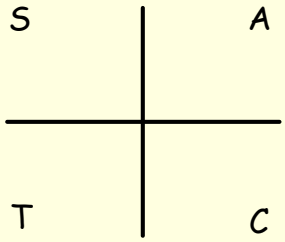
Examples

1) sin(x) = 0.4 for 0 < x < 360



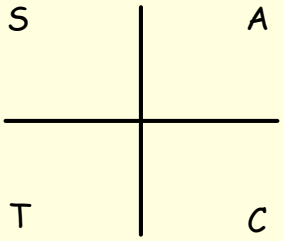
Examples

2) $\cos(x) = 0.5$ for $0 < x < 360$



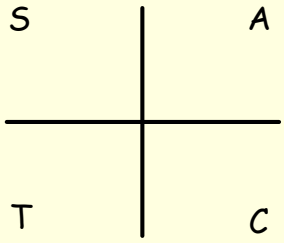
Examples

3) $\tan(x) = \sqrt{3}$ for $0 < x < 360$



Examples

4) cos(x) = -0.5 for 0 < x < 360



Practice

1. Solve the following equations where $0 \leq x \leq 360$

(a)	$\sin x^\circ = 0{\cdot}5$	**(b)**	$\cos x^\circ = 0{\cdot}866$	**(c)**	$\tan x^\circ = 1$
(d)	$\cos x^\circ = -0{\cdot}5$	**(e)**	$\tan x^\circ = -0{\cdot}577$	**(f)**	$\sin x^\circ = -0{\cdot}866$
(g)	$\tan x^\circ = 1{\cdot}732$	**(h)**	$\sin x^\circ = 0{\cdot}707$	**(i)**	$\cos x^\circ = 0{\cdot}707$
(j)	$\sin x^\circ = -0{\cdot}707$	**(k)**	$\cos x^\circ = -0{\cdot}866$	**(l)**	$\tan x^\circ = -1{\cdot}732$

2. Solve the following equations where $0 \leq x \leq 360$

(a)	$\sin x^\circ = 0{\cdot}313$	**(b)**	$\cos x^\circ = 0{\cdot}425$	**(c)**	$\tan x^\circ = 5{\cdot}145$
(d)	$\cos x^\circ = -0{\cdot}087$	**(e)**	$\tan x^\circ = -0{\cdot}869$	**(f)**	$\sin x^\circ = -0{\cdot}191$
(g)	$\tan x^\circ = 11{\cdot}43$	**(h)**	$\sin x^\circ = 0{\cdot}695$	**(i)**	$\cos x^\circ = 0{\cdot}755$
(j)	$\sin x^\circ = -0{\cdot}358$	**(k)**	$\cos x^\circ = -0{\cdot}682$	**(l)**	$\tan x^\circ = -0{\cdot}268$

3. Solve the following equations where $0 \leq x \leq 360$

(a)	$2 \sin x^\circ = 1$	**(b)**	$3 \cos x^\circ = 2$	**(c)**	$3 \tan x^\circ = 5$
(d)	$2 \cos x^\circ = -1$	**(e)**	$2 \tan x^\circ = -8$	**(f)**	$4 \sin x^\circ = -3$
(g)	$5 \tan x^\circ = 23{\cdot}5$	**(h)**	$5 \sin x^\circ = 2$	**(i)**	$6 \cos x^\circ = 1$
(j)	$8 \sin x^\circ = -3$	**(k)**	$11 \cos x^\circ = -9$	**(l)**	$10 \tan x^\circ = -9$

Answers

1.	**(a)**	30°, 150°	**(b)**	30°, 330°	**(c)**	45°, 225°
	(d)	120°, 240°	**(e)**	150°, 330°	**(f)**	240°, 300°
	(g)	60°, 240°	**(h)**	45°, 135°	**(i)**	45°, 315°
	(j)	225°, 315°	**(k)**	150°, 210°	**(l)**	120°, 300°
2.	**(a)**	18·2°, 161·8°	**(b)**	64·8°, 295·2°	**(c)**	79°, 259°
	(d)	95°, 265°	**(e)**	139°, 319°	**(f)**	191°, 349°
	(g)	85°, 265°	**(h)**	44°, 136°	**(i)**	41°, 319°
	(j)	201°, 339°	**(k)**	133°, 227°	**(l)**	165°, 345°
3.	**(a)**	30°, 150°	**(b)**	48·2°, 311·8°	**(c)**	59°, 239°
	(d)	120°, 240°	**(e)**	104°, 284°	**(f)**	228·6°, 311·4°
	(g)	78°, 258°	**(h)**	23·6°, 156·4°	**(i)**	80·4°, 279·6°
	(j)	202°, 338°	**(k)**	144·9°, 215·1°	**(l)**	138°, 318°