Website: contoureducation.com.au | **Phone:** 1800 888 300
Email: hello@contoureducation.com.au

VCE Specialist Mathematics ½
Trigonometry II [3.2]
Homework

Admin Info & Homework Outline:

Student Name	
Questions You Need Help For	
Compulsory Questions	Pg 2 - Pg 17

Section A: Compulsory Questions

Sub-Section [3.2.1]: Find Trig Ratios of Supplementary Relationships

Question 1

Simplify the following expressions:

a. $\sin(\pi - x)$

b. $\cos\left(\frac{\pi}{2} + x\right)$

c. $\tan(\pi - x)$

Space for Personal Notes

Question 2

If $\sin(x) = \frac{3}{5}$, where x is an angle in the first quadrant, evaluate the following:

a. $\sin(\pi + x)$

b. $\cos(x)$

c. $\tan(2\pi - x)$

Space for Personal Notes

Question 3

If $\cos(x) = -\frac{3}{10}$, where $\pi \leq x \leq \frac{3\pi}{2}$, evaluate the following:

a. $\cos(\pi + x)$

b. $\sin(\pi + x)$

c. $\tan(\pi - x)$

Question 4 Tech-Active.

If $\sin(x) = -\frac{9}{20}$, where x is a third quadrant angle, evalute $\cos(\pi + x)$.

Sub-Section [3.2.2]: Find Particular and General Solutions

Question 5

Solve the following trigonometric equations over the specified domain:

a. $2\cos(x) = \sqrt{3}, x \in [0, 2\pi]$

b. $4\sin(3x) = 2, x \in [0, \pi]$

c. $8\tan(2x) - 5 = 3, x \in \left[-\frac{\pi}{2}, \frac{3\pi}{2}\right]$

Question 6

Find the general solution to the following trigonometric equations:

a. $2\sin\left(-4x + \frac{\pi}{6}\right) = 1$

b. $\sqrt{2}\cos\left(3x-\frac{\pi}{2}\right)=1$

c. $\tan\left(\frac{\pi}{2}x+\frac{\pi}{3}\right)-1=0$

Space for Personal Notes

Question 7

Consider the function $f(x) = 2\tan\left(3x + \frac{\pi}{3}\right) + 2$.

a. Find the general solution to $f(x) = 0$.

b. Hence, solve $f(x) = 0$ for $x \in [0, \pi]$.

Question 8 Tech-Active.

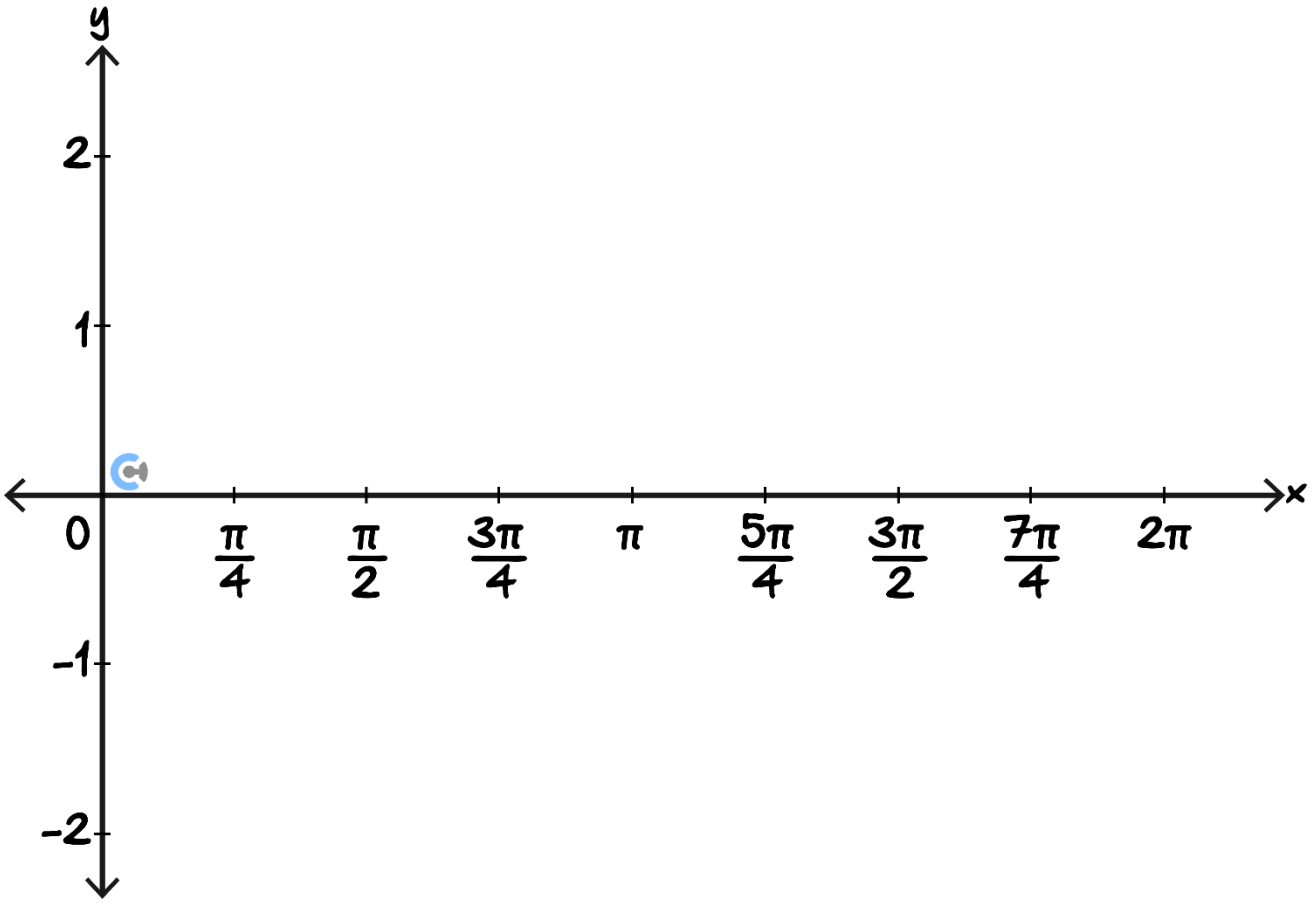
Find the general solution to $2\sin(\pi(x - 2)) = 1$.

Sub-Section [3.2.3] : Graph Sine, Cosine and Tangent Functions

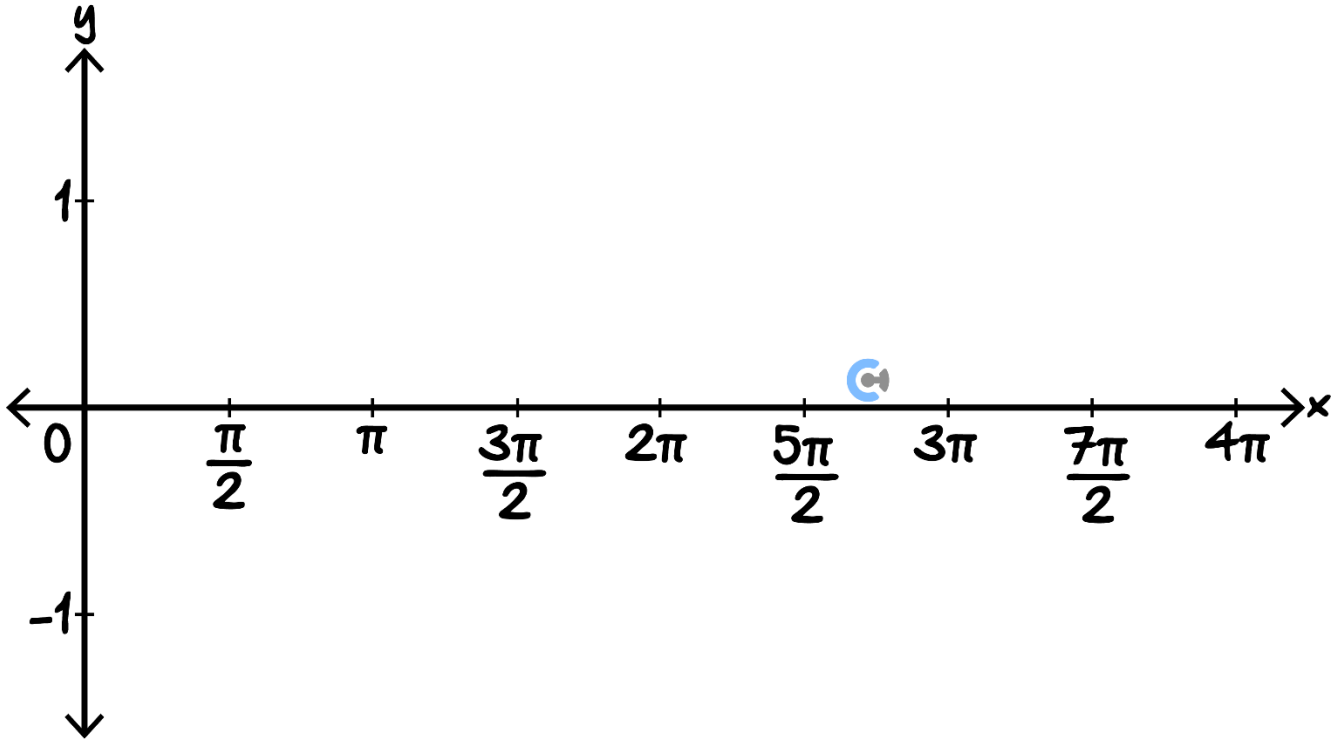
Question 9

Sketch the the graphs of the following functions over the indicated domain. Label all axes intercepts and endpoints with coordinates, and label asymptotes with equations.

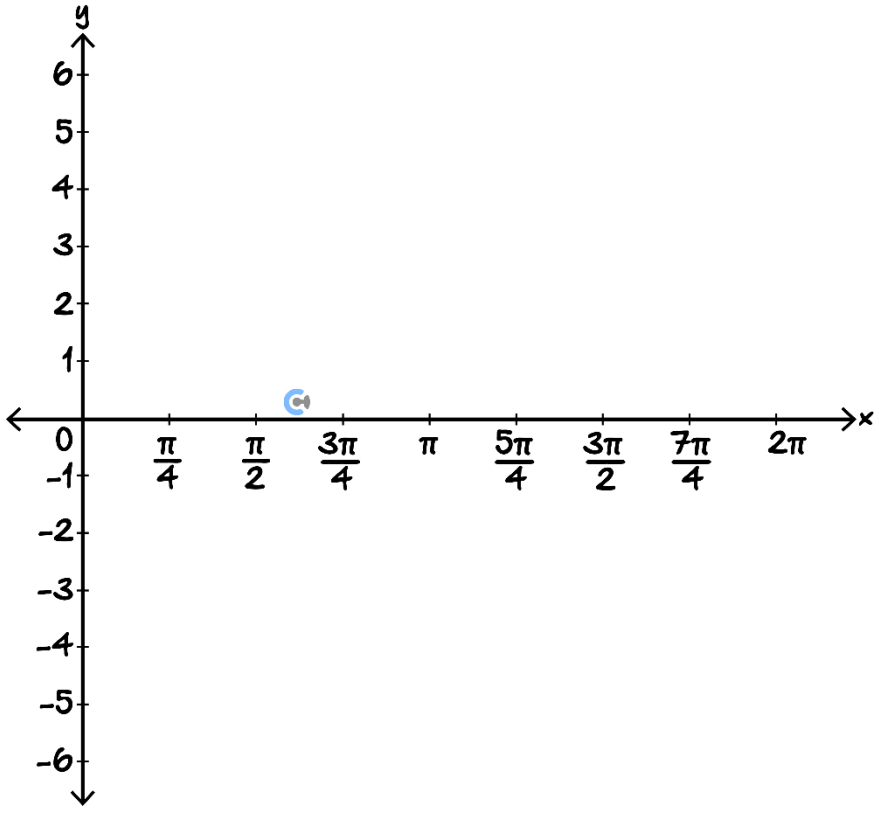
a. $y = \cos(2x), x \in [0, 2\pi]$



b. $y = -\sin\left(\frac{x}{2}\right), x \in [0,4\pi]$



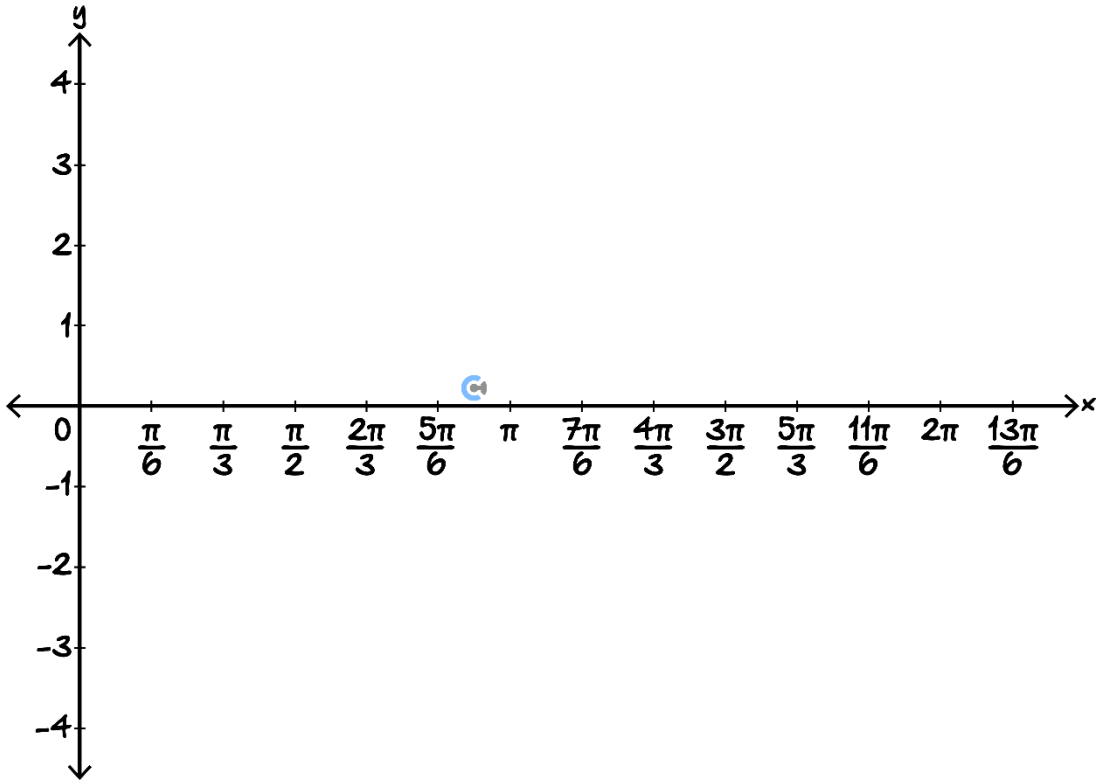
c. $y = \tan\left(x - \frac{\pi}{4}\right), x \in [0,2\pi]$



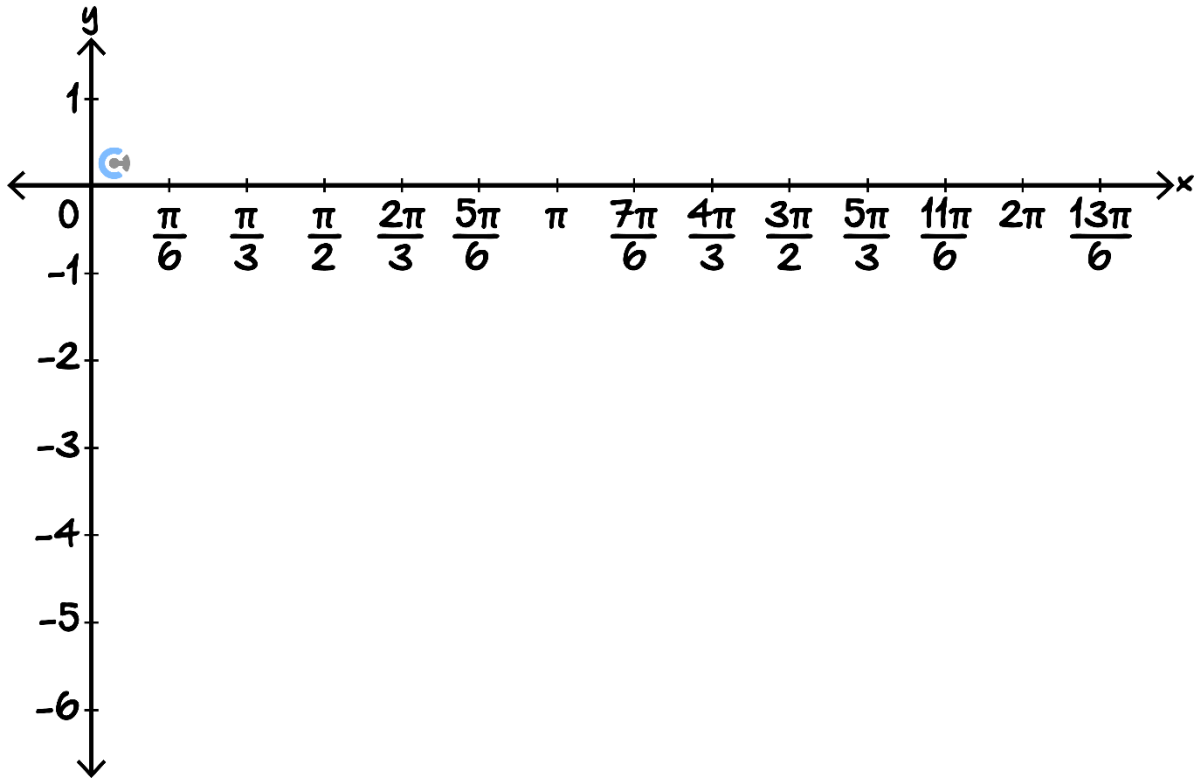
Question 10

Sketch the graphs of the following functions over the indicated domain. Label all axes intercepts, turning points and endpoints with coordinates, and label asymptotes with equations.

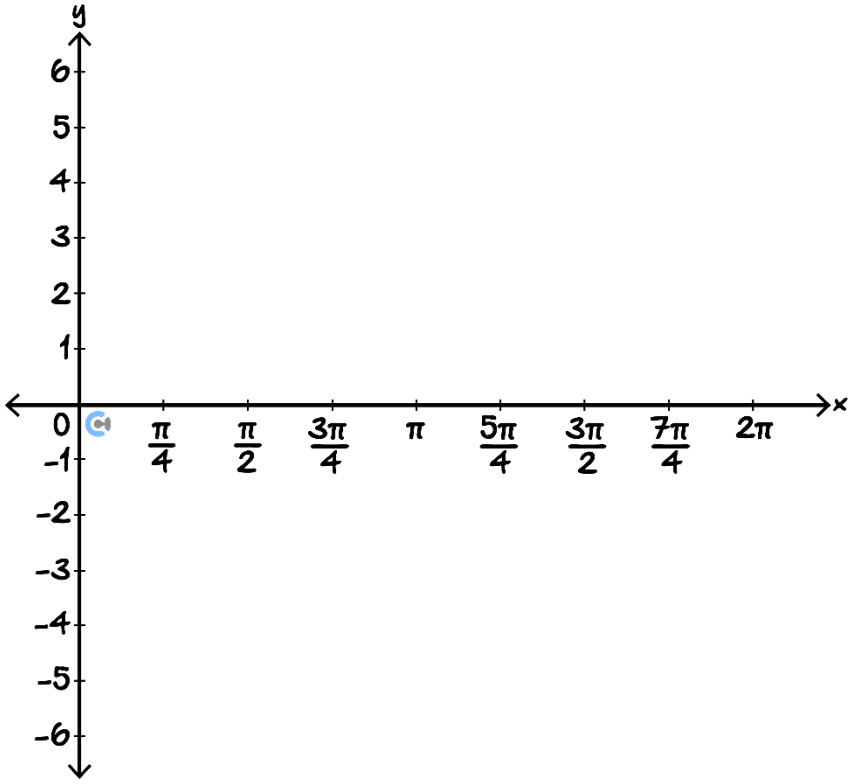
a. $y = 2\sin\left(x - \frac{\pi}{3}\right), x \in [0, 2\pi]$



b. $y = -3\cos(2x) - 3, x \in [0, 4\pi]$



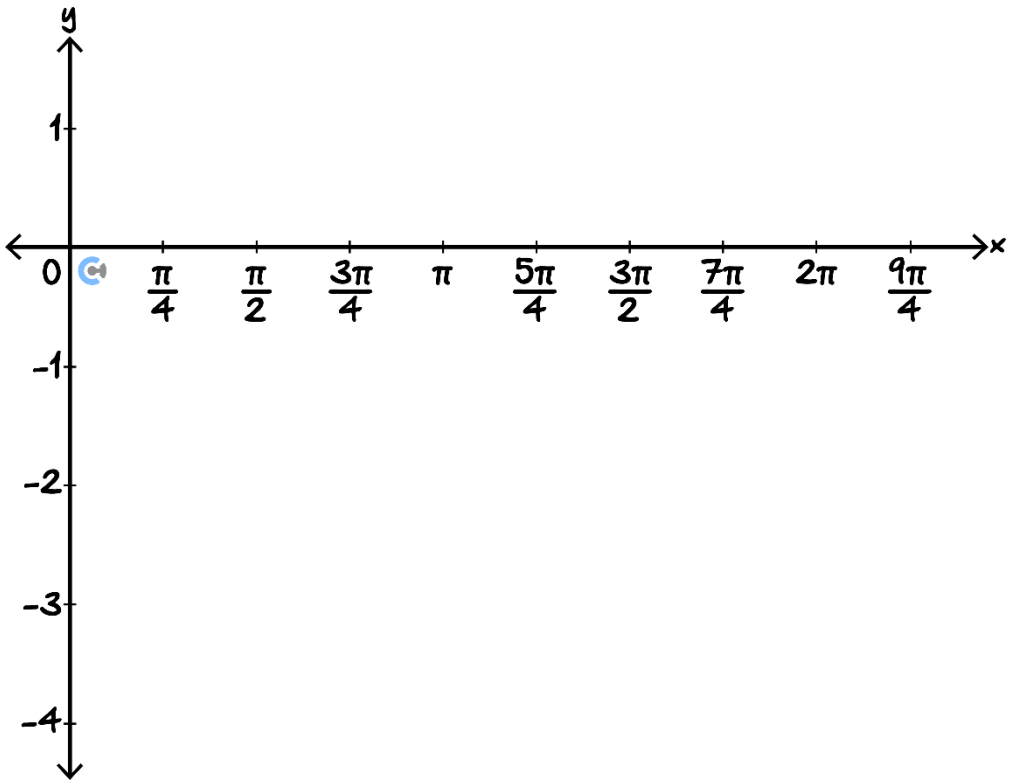
c. $y = 2\tan\left(2x - \frac{\pi}{2}\right), x \in [0,2\pi]$



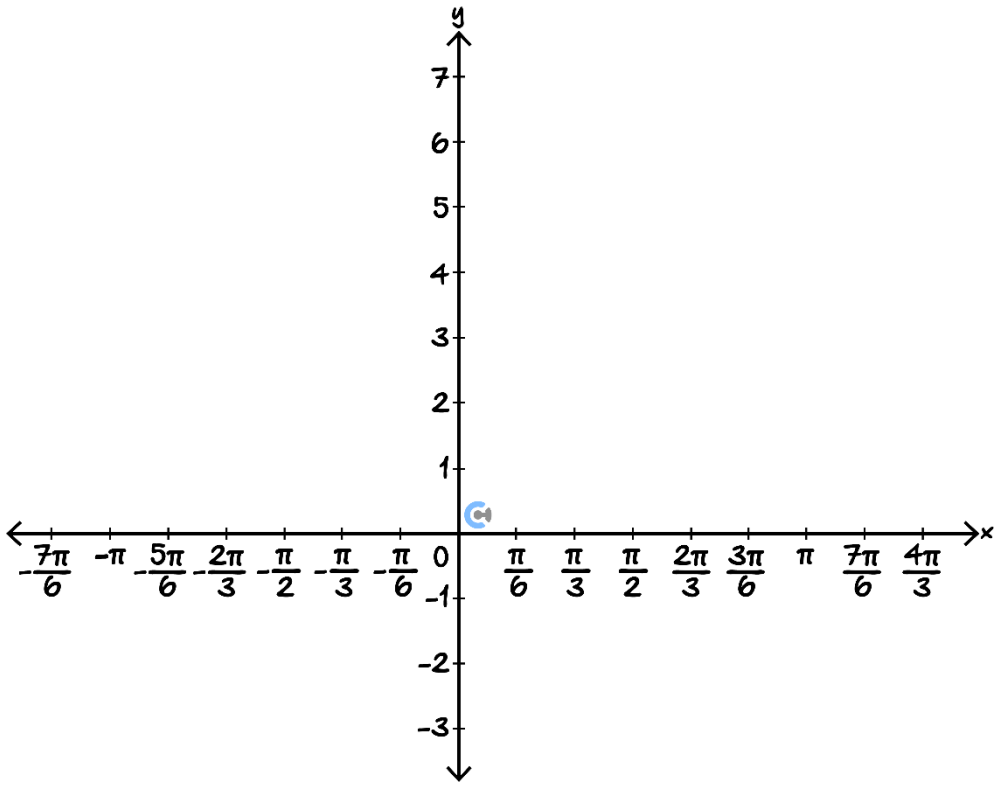
Question 11

Sketch the graphs of the following functions over the indicated domain. Label all axes intercepts, turning points and endpoints with coordinates, and label asymptotes with equations.

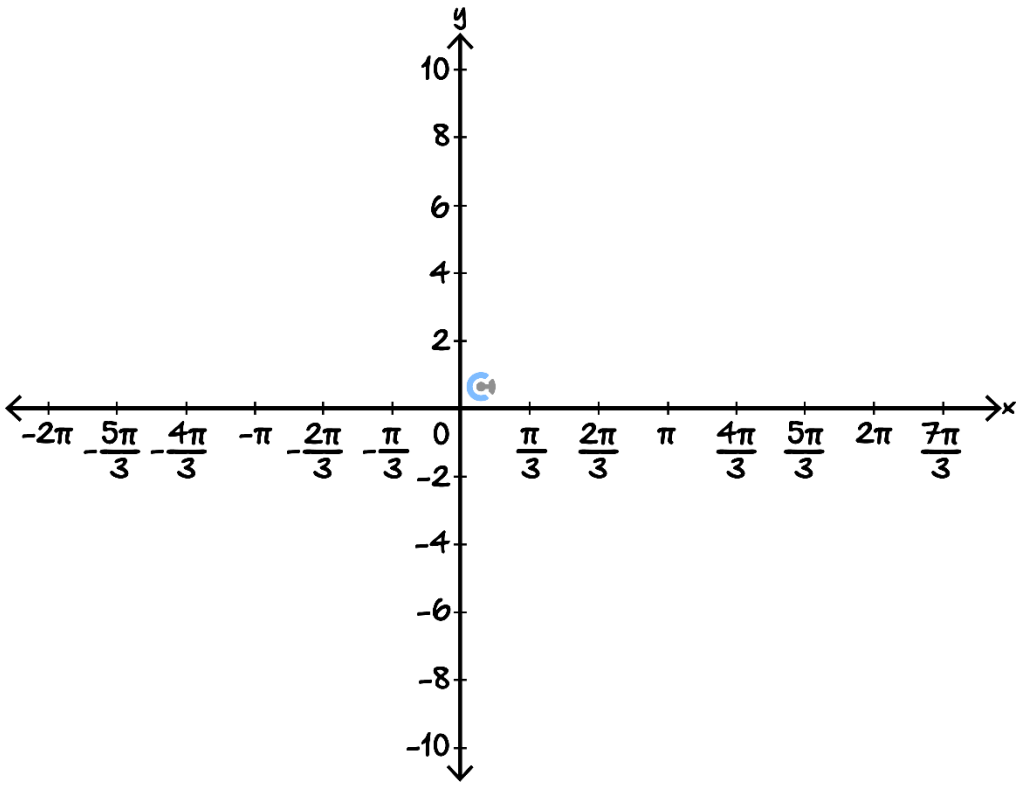
a. $y = 2\sin\left(2x - \frac{\pi}{3}\right) - 1, x \in [0,2\pi]$



b. $y = 4\cos\left(\frac{\pi}{4} - 2x\right) + 2, x \in [-\pi, \pi]$

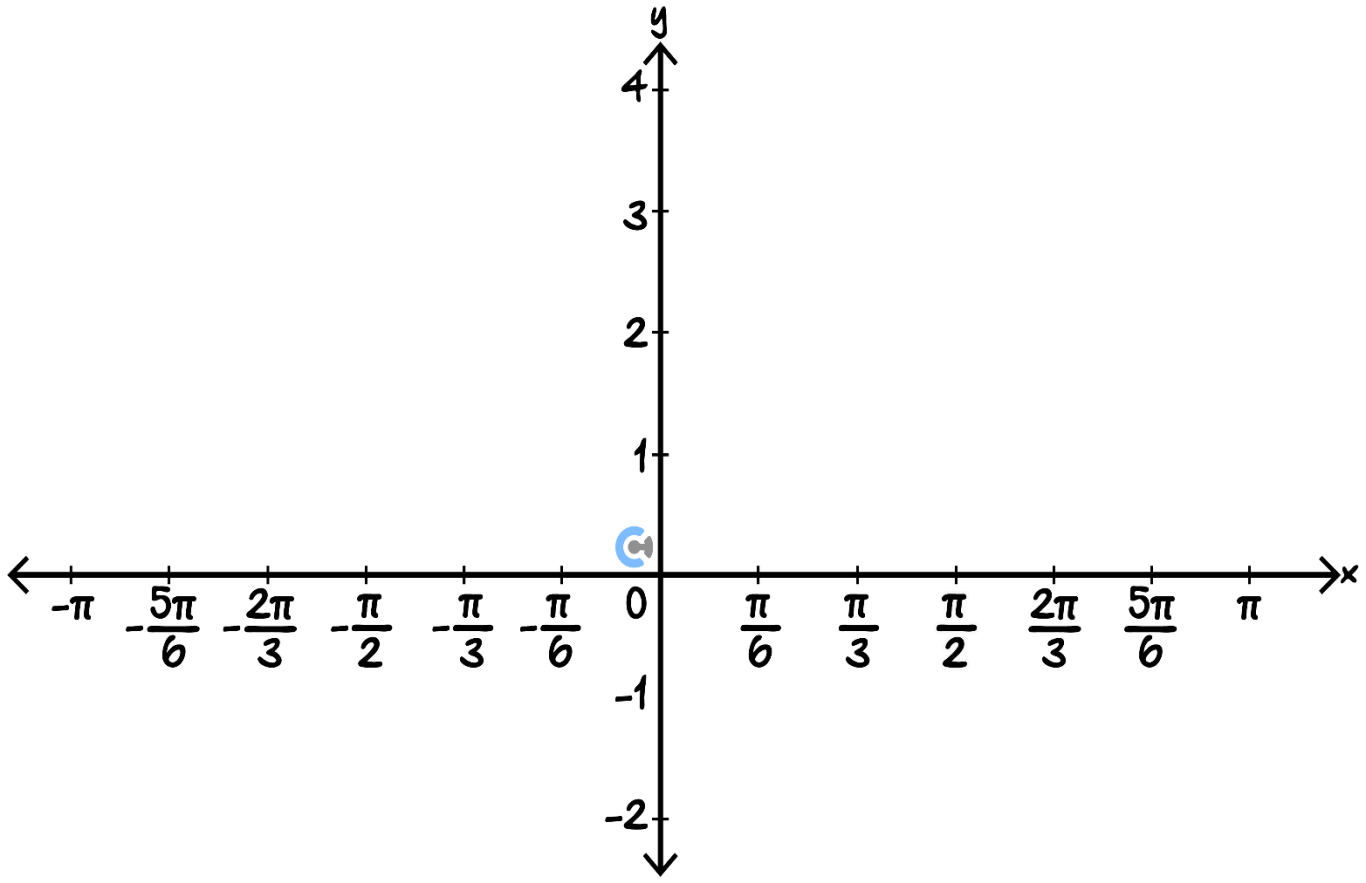


c. $y = 2\tan\left(\frac{\pi}{3} - \frac{x}{2}\right), x \in [-2\pi, 2\pi]$



Question 12 Tech-Active.

Sketch the graph of $y = 2\cos\left(2x + \frac{\pi}{4}\right)$. Label all axes intercepts, turning points and endpoints with coordinates.



Space for Personal Notes

Sub-Section: The 'Final Boss'

Question 13

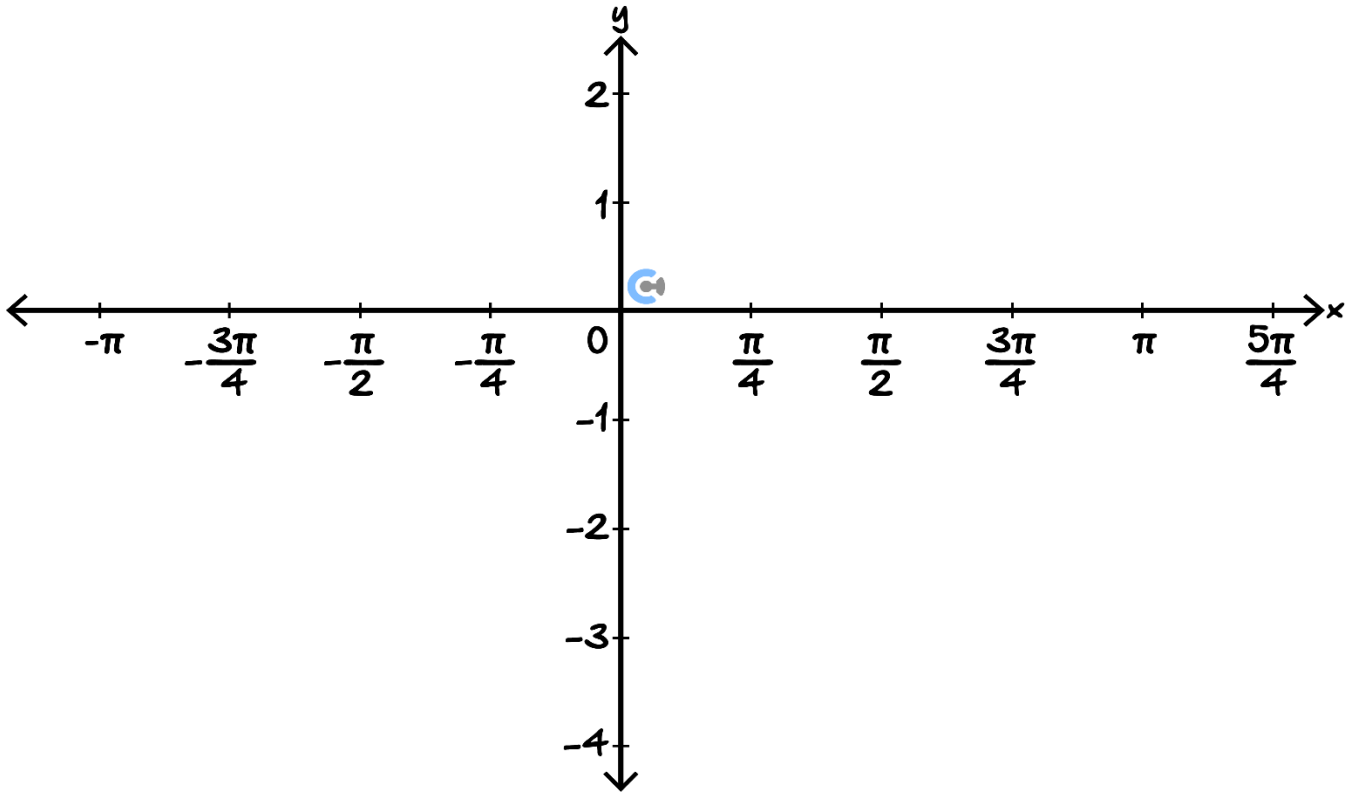
Consider the function $f(x) = 3\sin\left(2x + \frac{\pi}{3}\right) + \cos\left(2x + \frac{5\pi}{6}\right) - 1$.

a. Express $f(x)$ in the form $f(x) = a\sin(2x + b) - 1$.

b. Find the general solution to $f(x) = 0$.

c. Find all solutions to $f(x) = 0$ for $x \in [-\pi, \pi]$.

d. Sketch the graph of $y = f(x)$ on the axes below. Labell all axes intercepts, turning points and endpoints with coordinates.



Space for Personal Notes

CONTOUREDUCATION

Website: contoureducation.com.au | **Phone:** 1800 888 300 | **Email:** hello@contoureducation.com.au

VCE Specialist Mathematics ½

Free 1-on-1 Consults

What Are 1-on-1 Consults?

- **Who Runs Them?** Experienced Contour tutors (45 + raw scores and 99 + ATARs).
- **Who Can Join?** Fully enrolled Contour students.
- **When Are They?** 30-minute 1-on-1 help sessions, after school weekdays, and all day weekends.
- **What To Do?** Join on time, ask questions, re-learn concepts, or extend yourself!
- **Price?** Completely free!
- **One Active Booking Per Subject:** Must attend your current consultation before scheduling the next. :)

SAVE THE LINK, AND MAKE THE MOST OF THIS (FREE) SERVICE!

Booking Link

bit.ly/contour-specialist-consult-2025