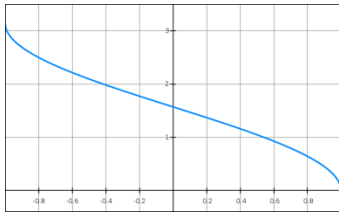


1. (a) For $0 \leq y \leq \pi$, sketch the graph of $y = g(x)$ where $g(x) = \arccos x$, $-1 \leq x \leq 1$.
(b) Find the exact value of x for which $3g(x+1) - \pi = 0$.
2. Given that $x = -\cos\left(\frac{y}{3}\right)$, find $\frac{dy}{dx}$ in terms of x , simplifying your answer
3. Given that $x = \tan y$, find an expression for $\frac{dy}{dx}$ in terms of x , simplifying your answer
4. Given that $\arcsin x = \arccos y$, find a simplified expression for $x^2 + y^2$
5. A curve C is defined by the equation $y = -\arcsin(x-1)$, $0 \leq x \leq 2$.
 - a) Describe the two geometric transformations that map the graph of $y = \arcsin x$ onto the graph of C.
 - b) i) Sketch the graph of C.
ii) State the co-ordinates of the points where C meets either of the axes.
iii) State the co-ordinates of the end points of C
6. Solve the equation $\arctan \frac{1}{3} + \arctan \frac{4}{3} = \arctan x$

Answers

1)a)



b) $-\frac{1}{2}$

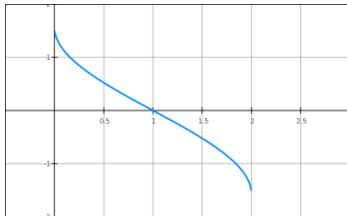
2) $\frac{dy}{dx} = \frac{3}{\sqrt{1-x^2}}$

3) $\frac{dy}{dx} = \frac{1}{1+x^2}$

4) 1

5) a) translation 1 unit to the right, followed by a reflection in the y axis.

b) i)



ii) $(0, \frac{\pi}{2})$ and $(1, 0)$

iii) $(0, \frac{\pi}{2})$ and $(2, -\frac{\pi}{2})$

6) 3