(33) Inverse Trig Functions arcsin x, arccos x and arctan x

WORKING AT D/E

(1) Find the value of each in radians in terms of π:

(a) $\arcsin\left(\frac{\sqrt{3}}{2}\right)$ (b) $\arccos(0.5)$ (c) $\arctan(\sqrt{3})$

(2) Write down the value of each:

(a) $\sin\left(\arcsin\left(\frac{1}{2}\right)\right)$ (b) $\cos\left(\arccos\left(\frac{\sqrt{2}}{2}\right)\right)$

(3) Find, without a calculator, the value of each:

(a) $\cos(\arcsin(1))$ (b) $\tan\left(\arccos\left(\frac{1}{\sqrt{2}}\right)\right)$

WORKING AT B/C

(1) (a) Sketch the graph of $y = \arccos x$ stating the domain and range.

(b) Sketch the graph of $y = \arcsin x$ stating the domain and range.

(c) Sketch the graph of $y = \arctan x$ stating the domain, range and the equations of any asymptotes.

(2) Given that $\arcsin a = x$, $0 < x < \frac{\pi}{2}$, show that:

(a) $\cos x = \sqrt{1 - a^2}$

(a) $\tan x = \frac{a}{\sqrt{1-a^2}}$

WORKING AT A*/A

(1) Given that $\arccos k = x$, $0 < x < \frac{\pi}{2}$, find an expression for;

(a) $\sin x$

(b) $\tan x$

(c) $\cos(\arccos k)$

(2) Given that $\arctan\left(\frac{\pi}{2} - k\right) = y$, $0 < y < \frac{\pi}{2}$, find an expression for $\sin y$.