





## Answer Keys and Solutions

3)athongo															
Given that,															
P)() > 12()	2)>	$-2^x(\log 2) + 2$	$2\log 2$												
$\Rightarrow 2^{2x} > -2^x$	+2														
$\Rightarrow 2^x > 2^0$															
2)athongo															
$(\cos x)^y = (\sin x)^y$	$\sin y)^{i}$	, mainauan.	Ш	. mathonao											
$y \log \cos x =$	$x \log$	$g \sin y$													
$y \log \cos x =$	x log	$g \sin y$	///.												
	$\Rightarrow 2^{2x} > -2^x$ $\Rightarrow 2^{2x} + 2^x - 2^x$ $\Rightarrow 2^{2x} + 2^x - 3^x$ $\Rightarrow 2^x - 1 > 0$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^0$ $\therefore x > 0$ 2) We have, $(\cos x)^y = (\sec x)^$	$\Rightarrow 2^{2x-1}(2 \log 2) > \\ \Rightarrow 2^{2x} > -2^x + 2 \\ \Rightarrow 2^{2x} + 2^x - 2 > 0 \\ \Rightarrow (2^x - 1)(2^x + 2) \\ \Rightarrow 2^x - 1 > 0 \ (\because 2^x) \\ \Rightarrow 2^x > 1 \\ \Rightarrow 2^x > 2^0 \\ \therefore x > 0.$ 2) Thomas We have, $(\cos x)^y = (\sin y)^x$ Taking logarithms of y log $\cos x = x \log x$ Differentiate with respect to the properties of the properties o	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2^x > 2^{2x} > -2^x + 2$ $\Rightarrow 2^{2x} > -2^x + 2$ $\Rightarrow 2^{2x} + 2^x - 2 > 0$ $\Rightarrow (2^x - 1)(2^x + 2) > 0$ $\Rightarrow 2^x - 1 > 0 \ (\because 2^x + 2 > 0, \ \forall x)$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^0$ $\therefore x > 0.$ 2) though mathongo  We have, $(\cos x)^y = (\sin y)^x$ Faking logarithms on both sides, $y \log \cos x = x \log \sin y$ Differentiate with respect to x we y log $\cos x = x \log \sin y$ mathongo  mathongo	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ $\Rightarrow 2^{2x} > -2^x + 2$ $\Rightarrow 2^{2x} > -2^x + 2$ $\Rightarrow 2^{2x} + 2^x - 2 > 0$ $\Rightarrow (2^x - 1)(2^x + 2) > 0$ $\Rightarrow 2^x - 1 > 0 \ (\because 2^x + 2 > 0, \ \forall x \in R)$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^0$ $\therefore x > 0$ 2) though whathough whether the spect to x we get y log cos $x = x \log \sin y$ Differentiate with respect to x we get y log cos $x = x \log \sin y$ mathong whathong whathong whathong whathong whether the spect to x we get y log cos $x = x \log \sin y$ mathong whathong wha	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ $\Rightarrow 2^{2x} > -2^x + 2$ $\Rightarrow 2^{2x} + 2^x - 2 > 0$ $\Rightarrow (2^x - 1)(2^x + 2) > 0$ $\Rightarrow 2^x - 1 > 0 (\because 2^x + 2 > 0, \forall x \in R)$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^0$ $\Rightarrow (\cos x)^y = (\sin y)^x$ Taking logarithms on both sides, we get ylog $\cos x = x \log \sin y$ Differentiate with respect to $x$ we get ylog $\cos x = x \log \sin y$ mathongo  mathongo	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ $\Rightarrow 2^{2x} > -2^x + 2$ $\Rightarrow 2^{2x} + 2^x - 2 > 0$ $\Rightarrow (2^x - 1)(2^x + 2) > 0$ $\Rightarrow 2^x - 1 > 0 \ (\because 2^x + 2 > 0, \ \forall x \in R)$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^0$ $\Rightarrow (x > 0)$ 2) though we have, $(\cos x)^y = (\sin y)^x$ Taking logarithms on both sides, we get mathonso we have, $(\cos x)^y = (\sin y)^x$ Taking logarithms on both sides, we get mathonso we have, $y \log \cos x = x \log \sin y$ Differentiate with respect to x we get we have a sin y of the sides we get we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we sides we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we have a sin y of the sides we get we sides we get we have a sin y of the sides we get we sides we g	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ mathongo	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ mathongo	$\Rightarrow 2^{2k-3}(2\log 2) > -2^x(\log 2) + 2\log 2$ $\Rightarrow 2^{2k} + 2^x - 2 > 0$ $\Rightarrow 2^{2k} + 2^x - 2 > 0$ $\Rightarrow 2^x + 2^x - 2 > 0$ $\Rightarrow 2^x + 2 > 0$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^9$ $\Rightarrow 2^x > 2$ $\Rightarrow 2^9 > 1$ $\Rightarrow 2^x > 2^9$ $\Rightarrow 2^9 > 1$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^9$ $\Rightarrow 2^x > 1$ $\Rightarrow 2^x > 2^9$ $\Rightarrow 2^x > 1$	$\Rightarrow 2^{2x-1}(2\log 2) \Rightarrow 2^x(\log 2) + 2\log 2$ mathongs whathongs when mathongs with mathongs w	$32^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ mathons $32^x > -2^x + 2 > 0$ mathons $32^x > -2^x + 2 > 0$ mathons $32^x > -2^x + 2 > 0$ mathons $32^x > 0$	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2$ mathons $\nearrow$ mat	> 28x-1(2 log 2)> - 2* (log 2)   2 log 2 mathongs   mat	$> 2^{x-3}(2\log 2) > -2^{x}(\log 2) + 2\log 2$ mathongs with math	$\Rightarrow 2^{2x-1}(2\log 2) > -2^x(\log 2) + 2\log 2  \text{mathongo}  ma$