

Pure 32 – Inverse Functions, sec, cosec and cot

Please <u>complete</u> this homework by ______. Start it early. If you can't do a question you will then have time to ask your teacher for help or go to a drop in session.

vious ving you	topics. Please <u>com</u> ur answers to 3 s. f.	plete a	l questions.			
b)	sin x = 0.41	c)	tan x = 0.74			
b)	cos 2x = 0.5					
3. Solve each equation for x, -180° \leq x \leq 180°, giving your answers to 1 decimal place where appropriate						
b)	4cos3x = 2	c)	tan(2x+30) = -1			
the int	terval 0° ≤ x ≤ 360°. Giv	ve your a	inswers to 1 decim	al place where		
b)	$\tan^2 x + 3\tan x - 1 = 0$					
 5. a) Write down the identity which links sin²x and cos²x b) Write down the identity which links sinx, cosx and tanx 						
6. Solve each equation for x in the interval $0^{\circ} \le x \le 360^{\circ}$. Give your answers to 1 decimal place where						
b)	2sin ² x + 3cosx = 3	c)	3sinxtanx = 8			
Section 2 – Consolidation of this week's topic. Please <u>complete</u> all questions.						
$x \in R$,	$-\frac{\pi}{2} \le x \le \frac{\pi}{2}$					
(4) 22	d stata it's domain			(1 mark) (2 marks)		
agram t	the graphs of $f(x)$ and	$f^{-1}(x)$		(4 marks)		
2. Solve each equation, giving your answers to 3 significant figures.						
b)	arctan3x = 0.96	c) 3	– arccos 2x = 0	(6 marks)		
$sx - \frac{\pi}{3}$, <i>x</i> ∈ <i>R</i> , −1 ≤ <i>x</i> ≤ 1					
$\left(-\frac{1}{2}\right)$ in t	terms of π .			(1 mark)		
b) Solve the equation $f(x) = 0$.						
c) Define the inverse function $f^{-1}(x)$ and state it's domain.						
agram t	the graphs of $f(x)$ and	$f^{-1}(x)$		(4 marks)		
e value	of					
	vious ving you b) b) $(x + 0)^{-1} = (x + 1)^{-1} = (x + 1)^{$	vious topics. Please complexing your answers to 3 s. f. b) $\sin x = 0.41$ b) $\cos 2x = 0.5$ $80^{\circ} \le x \le 180^{\circ}$, giving your answers to $3 \sin^{\circ} \le x \le 180^{\circ}$. Gives b) $4\cos 3x = 2$ a the interval $0^{\circ} \le x \le 360^{\circ}$. Gives b) $\tan^{2}x + 3\tan x - 1 = 0$ which links $\sin^{2}x$ and $\cos^{2}x$ which links $\sin^{2}x$ and $\cos^{2}x$ which links $\sin x$, $\cos x$ and $\tan x$ the interval $0^{\circ} \le x \le 360^{\circ}$. Gives b) $2\sin^{2}x + 3\cos x = 3$ of this week's topic. Please $x \in R, -\frac{\pi}{2} \le x \le \frac{\pi}{2}$ f(x) and state it's domain. agram the graphs of $f(x)$ and your answers to 3 significant f b) $\arctan 3x = 0.96$ $sx - \frac{\pi}{3}, x \in R, -1 \le x \le 1$ $-\frac{1}{2}$) in terms of π . x) = 0. ction $f^{-1}(x)$ and state it's domain agram the graphs of $f(x)$ and a gram the graphs of $f(x)$ and a gram the graphs of $f(x)$ and a gram the graphs of f(x) and a gram the graph a gram the gra	vious topics. Please <u>complete</u> all ring your answers to 3 s. f. b) $\sin x = 0.41$ c) b) $\cos 2x = 0.5$ $\cos^2 x \le 180^\circ$, giving your answers to b) $4\cos^3 x = 2$ c) a the interval $0^\circ \le x \le 360^\circ$. Give your at b) $\tan^2 x + 3\tan x - 1 = 0$ which links $\sin^2 x$ and $\cos^2 x$ which links $\sin^2 x$ and $\cos^2 x$ which links $\sin^2 x$ and $\cos^2 x$ which links $\sin^2 x = 3$ c) of this week's topic. Please <u>con</u> $x \in R, -\frac{\pi}{2} \le x \le \frac{\pi}{2}$ f(x) and state it's domain. agram the graphs of $f(x)$ and $f^{-1}(x)$ your answers to 3 significant figures. b) $\arctan 3x = 0.96$ c) 3 $sx - \frac{\pi}{3}, x \in R, -1 \le x \le 1$ $-\frac{1}{2}$ in terms of π . x) = 0. ction $f^{-1}(x)$ and state it's domain. agram the graphs of $f(x)$ and $f^{-1}(x)$	vious topics. Please <u>complete</u> all questions. ing your answers to 3 s. f. b) $\sin x = 0.41$ c) $\tan x = 0.74$ b) $\cos 2x = 0.5$ $180^\circ \le x \le 180^\circ$, giving your answers to 1 decimal place when b) $4\cos 3x = 2$ c) $\tan(2x+30) = -1$ in the interval $0^\circ \le x \le 360^\circ$. Give your answers to 1 decimal b) $\tan^2 x + 3\tan x - 1 = 0$ which links $\sin^2 x$ and $\cos^2 x$ which links $\sin^2 x$ and $\cos^2 x$ which links $\sin^2 x$ and $\cos^2 x$ which links $\sin^2 x = 3$ c) $3\sin x \tan x = 8$ b) $2\sin^2 x + 3\cos x = 3$ c) $3\sin x \tan x = 8$ of this week's topic. Please <u>complete</u> all question $x \in R, -\frac{\pi}{2} \le x \le \frac{\pi}{2}$ f(x) and state it's domain. agram the graphs of $f(x)$ and $f^{-1}(x)$ your answers to 3 significant figures. b) $\arctan 3x = 0.96$ c) $3 - \arccos 2x = 0$ $sx - \frac{\pi}{3}, x \in R, -1 \le x \le 1$ $\frac{1}{2}$) in terms of π . x) = 0. $\cot n f^{-1}(x)$ and state it's domain. $agram the graphs of f(x) and f^{-1}(x)evalue of$		

a) sec 23° b) cosec 185° c) cot 259

(1 mark each)



5. Find the value of

a)	$\operatorname{cosec} \frac{\pi}{\cdot}$	b)	$\cot \frac{3\pi}{4}$	c)	$\sec \frac{4\pi}{2}$
~)	4	~,	4	•,	3

(1 mark each)

6.

9.



The graph shows the curve $y = \sec x^{\circ}$ in the interval $0 \le x \le 720$.

- a Write down the coordinates of the turning points of the curve.
- **b** Write down the equations of the asymptotes.
- 7. Sketch each of the following curves for x in the interval $0 \le x \le 2\pi$. Show the coordinates of any turning points and the equations of any asymptotes.

a $y = 3 \sec x$ **b** $y = 1 + \csc x$ **c** $y = \cot 2x$ (9 marks)

8. Solve each equation for x in the interval $0 \le \theta \le 2\pi$, giving answers to 3 significant figures where appropriate

a)	$sec\theta = 1.8$	(2 marks)
b)	$cosec\left(\theta + \frac{\pi}{6}\right) = 2$	(4 marks)

- c) $cosec^2\theta 4 = 0$ (4 marks)
- d) $sec^2\theta 2sec\theta 3 = 0$ (4 marks)

Prove the following identities:(4 marks)a) $secx - cosx \equiv sinxtanx$ (4 marks)b) $((1 + cosx)(cosecx - cotx) \equiv sinx$ (4 marks)

Total 65 marks