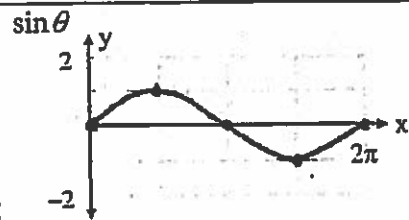
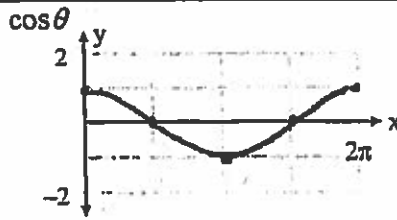


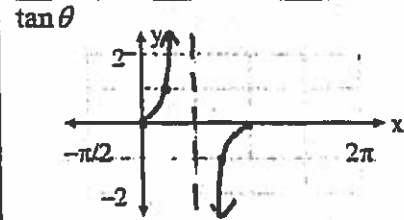
Fill in each of the following for each function.



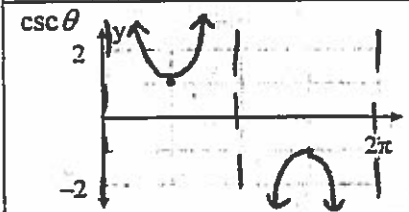
Odd or Even?	odd
Domain:	\mathbb{R}
Range:	$[-1, 1]$
Period:	2π
Zeroes:	@ mult of π



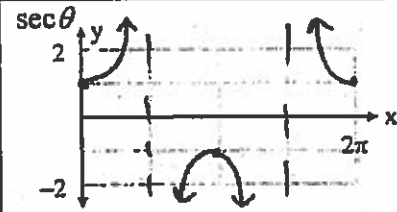
Odd or Even?	even
Domain:	\mathbb{R}
Range:	$[-1, 1]$
Period:	2π
Zeroes:	@ odd mult $\frac{\pi}{2}$



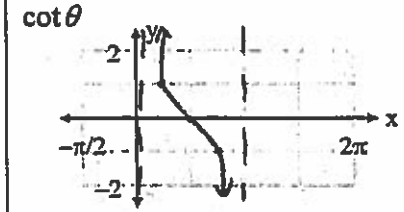
Odd or Even?	odd
Domain:	\mathbb{R} except odd mult $\frac{\pi}{2}$
Range:	\mathbb{R}
Period:	π
Zeroes:	@ mult of π



Odd or Even?	odd
Domain:	\mathbb{R} except mult π
Range:	$(-\infty, -1] \cup [1, \infty)$
Period:	2π
Zeroes:	none



Odd or Even?	even
Domain:	\mathbb{R} except odd mult $\frac{\pi}{2}$
Range:	$(-\infty, -1] \cup [1, \infty)$
Period:	2π
Zeroes:	none



Odd or Even?	odd
Domain:	\mathbb{R} except mult π
Range:	\mathbb{R}
Period:	π
Zeroes:	@ odd mult $\frac{\pi}{2}$

I.	Given: A: $\sin x$	B: $\cos x$	C: $\tan x$	D: $\cot x$	E: $\sec x$	F: $\csc x$
1. Which functions are even?	B, E					
2. Which functions are odd?	A, C, D, F					
3. Which functions have a period of π ?	C, D					
4. Which functions have a period of 2π ?	A, B, E, F					
5. Which functions have no amplitude?	C, D, E, F					
6. Which are symmetrical with the y-axis?	B, E					
7. How are the remaining functions symmetrical?	Origin Symmetry					
8. Which have a domain of all real numbers?	A, B					
9. Which have a range of $-1 \leq y \leq 1$ or $y \geq 1$ or $y \leq -1$?	A, B / E, F					
10. Which have asymptotes at odd multiples of $\frac{\pi}{2}$?	C, E					
11. Which have asymptotes at multiples of π ?	D, F					
12. "a" affects the vertices of which functions?	A, B, E, F					

II. Given the equation of the graph, find the following. DO NOT GRAPH.

13. $y = -3\sin(2x + 3\pi) - 1$

$$y = -3 \sin \left(2 \left(x + \frac{3\pi}{2} \right) \right) - 1$$

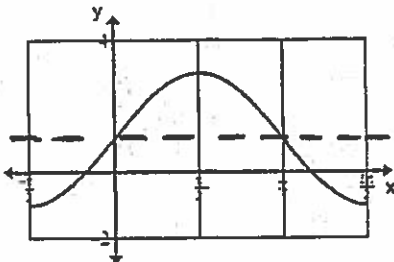
Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
3	down 1	yes	π	$\frac{3\pi}{2}$ left

14. $y = 2\tan 2(x - \pi) + 3$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
none	up 3	no	$\frac{\pi}{2}$	π right

III. Write the equation of each graph. Use the BOLD portion to write your equation.

15.

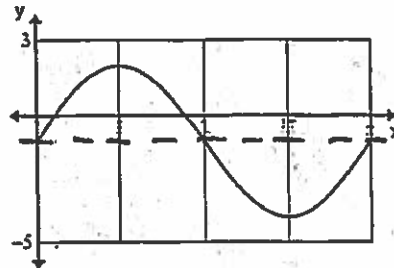


Amplitude: 2
 Vert. Shift: up 1
 Flip? yes
 Period: 2π
 Phase Shift: $\frac{\pi}{2}$ left

Equation:

$$y = -2 \cos \left(x + \frac{\pi}{2} \right) + 1$$

168.

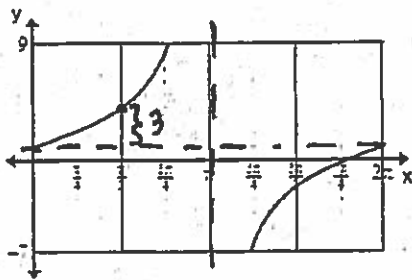


Amplitude: 3
 Vert. Shift: down 1
 Flip? no
 Period: π
 Phase Shift: none

Equation:

$$y = 3 \sin(2x) - 1$$

17.

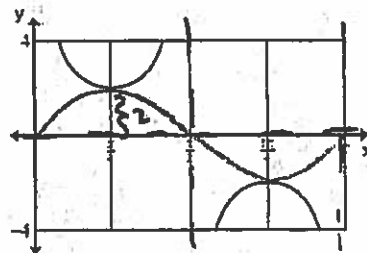


Amplitude: none
 Vert. Shift: up 1
 Flip? no
 Period: 2π
 Phase Shift: none

Equation:

$$y = 3 \tan \left(\frac{1}{2}x \right) + 1$$

18.

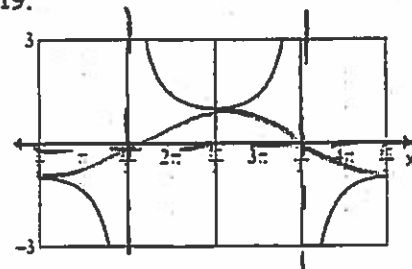


Amplitude: none
 Vert. Shift: none
 Flip? no
 Period: π
 Phase Shift: none

Equation:

$$y = 2 \csc(2x)$$

19.

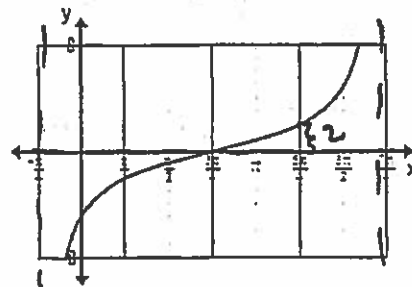


Amplitude: none
 Vert. Shift: none
 Flip? yes
 Period: 4π
 Phase Shift: $\frac{\pi}{2}$ right

Equation:

$$y = -\sec \left(\frac{1}{2} \left(x - \frac{\pi}{2} \right) \right)$$

20.



Amplitude: none
 Vert. Shift: none
 Flip? yes
 Period: 2π
 Phase Shift: $\frac{\pi}{2}$ left

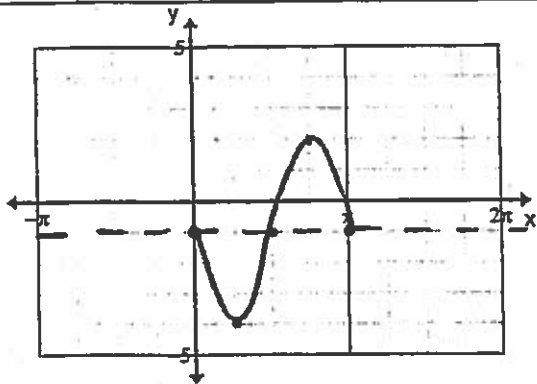
Equation:

$$y = -2 \cot \left(\frac{1}{2} \left(x + \frac{\pi}{2} \right) \right)$$

IV. Graph over ONE PERIOD.

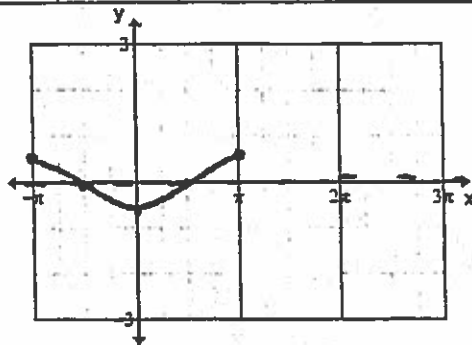
21. $y = -3\sin 2x - 1$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
3	down 1	yes	π	none



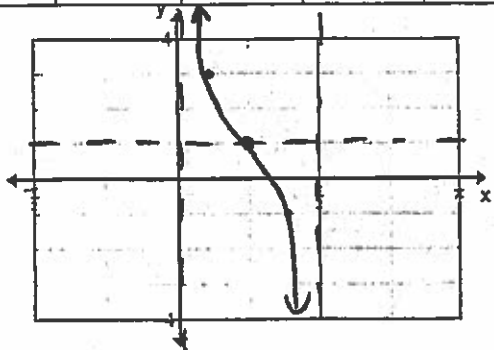
22. $y = \frac{1}{2}\cos(x + \pi)$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
$\frac{1}{2}$	none	no	2π	π left



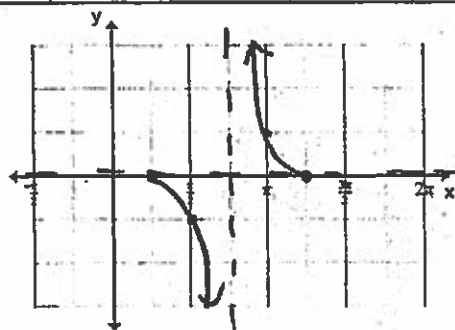
23. $y = 2\cot 2x + 1$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
none	up 1	no	$\frac{\pi}{2}$	none



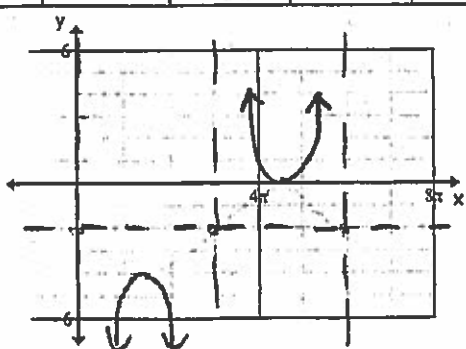
24. $y = -\tan\left(x - \frac{\pi}{4}\right)$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
none	none	yes	π	$\frac{\pi}{4}$ right



25. $y = -2\csc\left(\frac{1}{3}x\right) - 2$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
none	down 2	yes	6π	none



26. $y = \sec\left(2x - \frac{\pi}{2}\right)$ $y = \sec\left(2\left(x - \frac{\pi}{4}\right)\right)$

Amplitude:	Vert. Shift:	FLIP?	Period:	Phase Shift:
none	none	no	π	$\frac{\pi}{4}$ right

