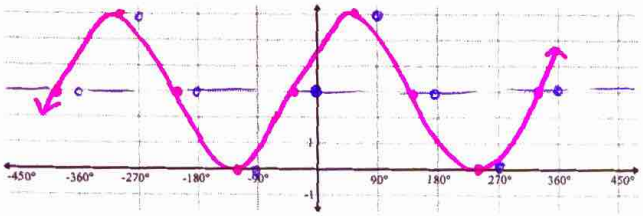
Algebra 2
Transformations with Sine and Cosine

Name: _____
Period: _____

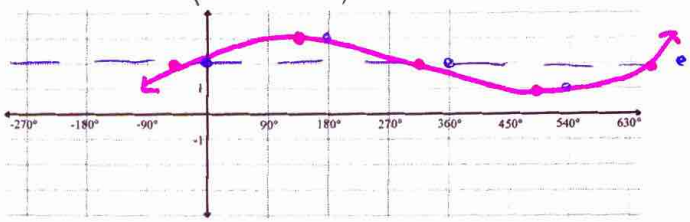
List all transformations, then sketch a complete graph.

◯ = Challenge problem!

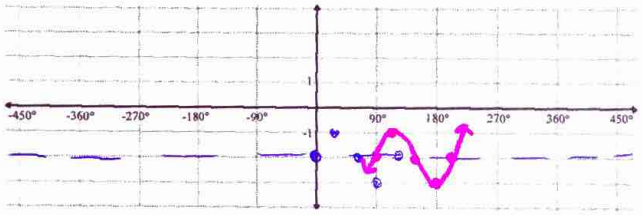
1. $f(x)=3\sin(x+30^\circ)+3$ a=3 U3 L30



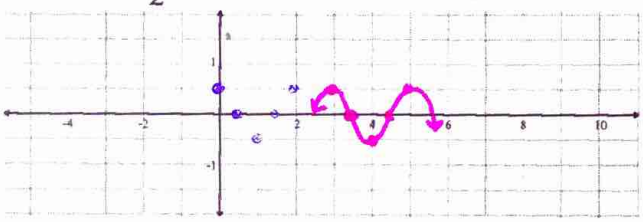
2. $f(x)=\sin\left(\frac{1}{2}(x+45^\circ)\right)+2$ L45 U2 b=1/2 → 4π 4π/4 = π (180°)



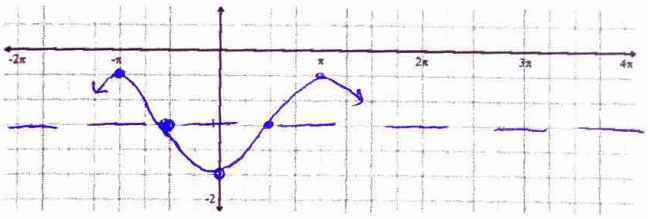
3. $f(x)=\sin(3(x-90^\circ))-2$ R90° D2 b=3 360/3 = 120 120/4 = 30°



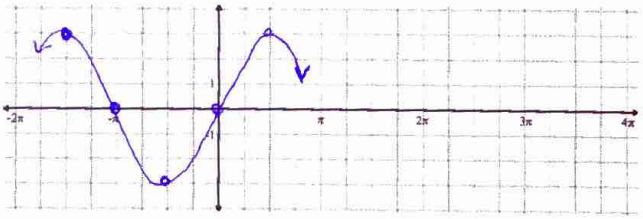
4. $f(x)=\frac{1}{2}\cos(\pi(x-3))$ R3 a=1/2 b=π → 2 2/4 = 1/2



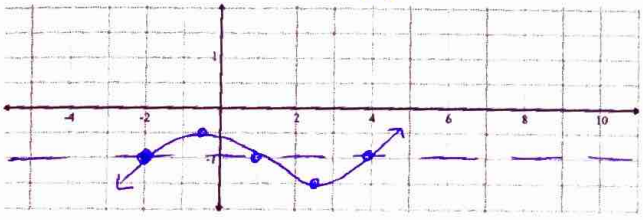
5. $f(x)=\frac{2}{3}\cos(x+\pi)-1$ Lπ a=2/3 D1



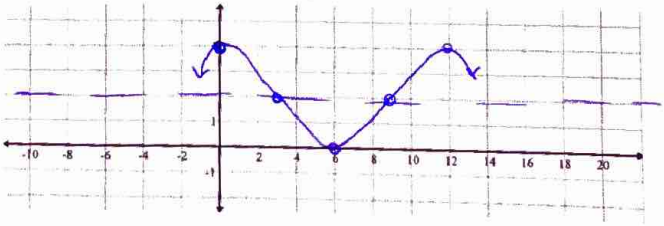
6. $f(x)=3\cos\left(x+\frac{3\pi}{2}\right)$ L3π/2 a=3



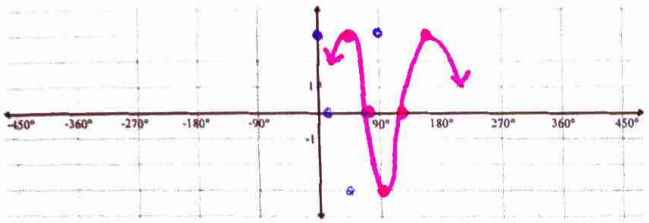
7. $f(x)=\sin\left(\frac{\pi}{3}(x+2)\right)-1$ L2 b=π/3 → 6 6/4 = 1.5 D1



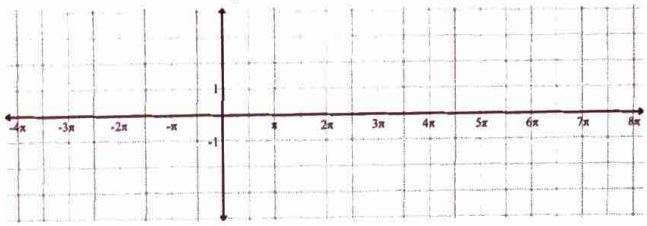
8. $f(x)=2\cos\left(\frac{\pi}{6}x\right)+2$ a=2 b=π/6 → 12 12/4 = 3 U2



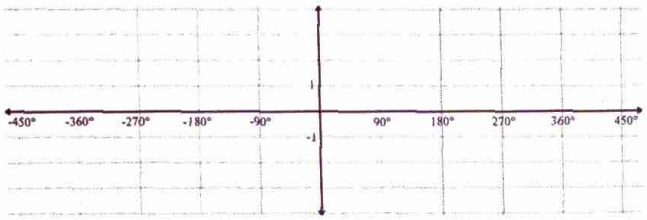
9. $f(x)=3\cos\left(4\left(x-45^\circ\right)\right)$ (1245) $a=3$ $b=4 \rightarrow 90^\circ$ $90/4=22.5^\circ$



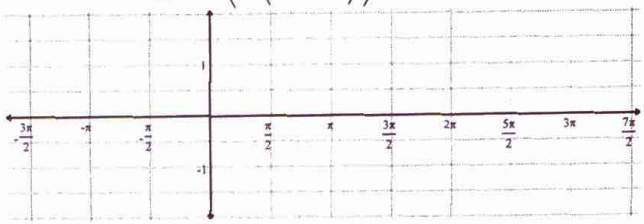
10. $f(x)=2\sin\left(\frac{1}{4}\left(x+\frac{\pi}{4}\right)\right)+1$



11. $f(x)=2\cos\left(3\left(x+30^\circ\right)\right)-1$

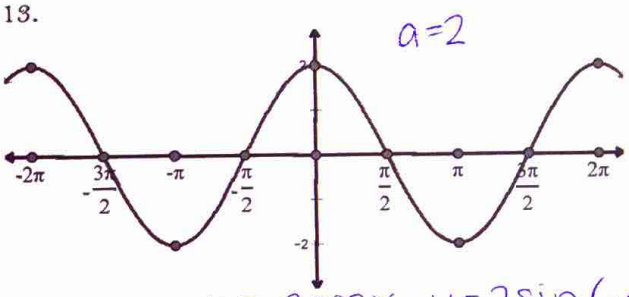


12. $f(x)=\frac{1}{2}\cos\left(2\left(x-\frac{\pi}{2}\right)\right)-1$



Find the sine equation and the cosine equation of the function graphed.

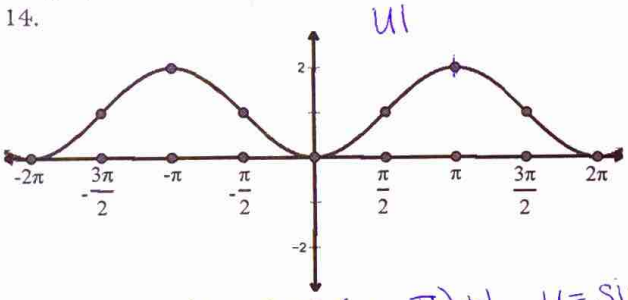
13.



$a=2$

$y=2\cos x$, $y=2\sin(x+\pi/2)$

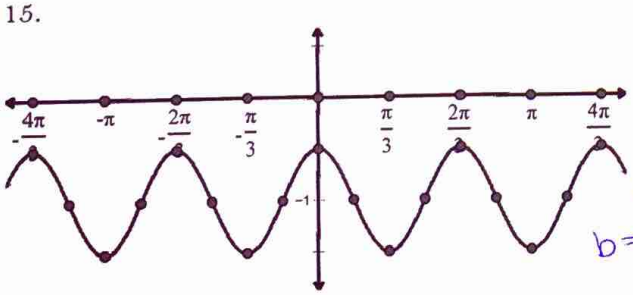
14.



U1

$y=\cos(x-\pi)+1$, $y=\sin(x-\pi/2)+1$

15.

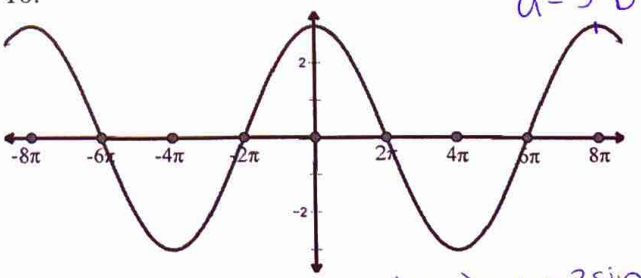


D1

$b=3$

$y=\cos(3(x))-1$, $y=\sin(3(x+\pi/2))-1$

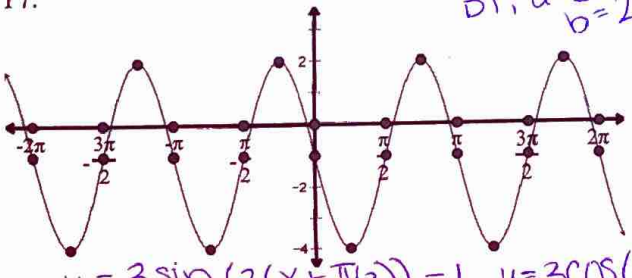
16.



$a=3$ $b=1/4$

$y=3\cos(1/4x)$, $y=3\sin(1/4(x+2\pi))$

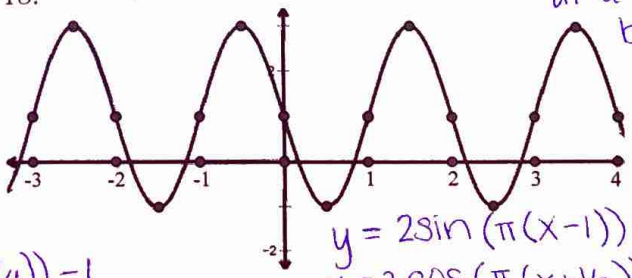
17.



D1, $a=3$ $b=2$

$y=3\sin(2(x+\pi/2))-1$ $y=3\cos(2(x+\pi/4))-1$

18.



U1 $a=2$ $b=\pi$

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

$y=2\cos(\pi(x+1/2))+1$