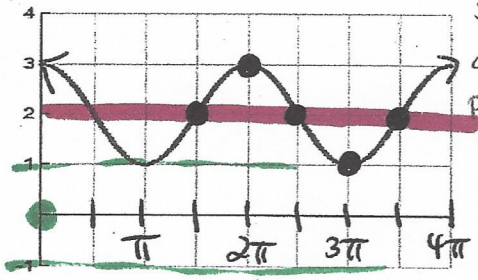
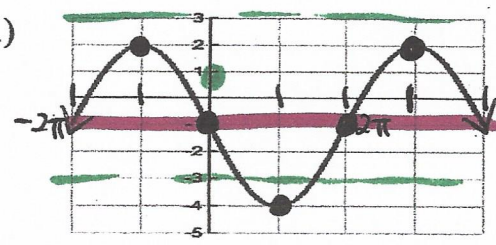
Advanced Functions – 8.4 WS: Writing Eq's for S/C Funct's Name: Key

Write the equation for either a sine or a cosine function based on the given info. Show work!

Given Info	Function	Work to Find a , b , c , and d	Equation for Function
1.) amplitude = 4 , period = 6π , right by 3π , down by 5	sine	$a=4$ $b=\frac{2\pi}{6\pi}$ $b=\frac{1}{3}$ $c=-\frac{1}{3}\cdot 3\pi$ $c=-\frac{3\pi}{3}$ $c=-\pi$ $d=-5$	$y=4\sin\left(\frac{1}{3}x-\pi\right)-5$
2.) amplitude = 1 , period = $\frac{3\pi}{4}$, left by $\frac{\pi}{2}$, up by 2	cosine	$a=1$ $b=\frac{2\pi}{\frac{3\pi}{4}}$ $b=\frac{8}{3}$ $c=-\frac{8}{3}\cdot\frac{-\pi}{2}$ $c=\frac{8\pi}{6}$ $c=\frac{4\pi}{3}$ $d=2$	$y=\cos\left(\frac{8}{3}x+\frac{4\pi}{3}\right)+2$
3.) amplitude = 3 , period = $\frac{\pi}{5}$, left by π , no vertical shift	sine	$a=3$ $b=\frac{2\pi}{\frac{\pi}{5}}$ $b=10$ $c=-10\cdot-\pi$ $c=10\pi$ $d=0$	$y=3\sin(10x+10\pi)$
4.) 	sine amp=1 period=2π right=$\frac{3\pi}{2}$ up 2	$a=1$ $b=\frac{2\pi}{2\pi}$ $b=1$ $c=-1\cdot\frac{3\pi}{2}$ $c=-\frac{3\pi}{2}$ $d=2$	$y=\sin\left(x-\frac{3\pi}{2}\right)+2$
5.) amplitude = 5 , period = $\frac{\pi}{2}$, left by $\frac{\pi}{4}$, up by 1	cosine	$a=5$ $b=\frac{2\pi}{\frac{\pi}{2}}$ $b=4$ $c=-4\cdot\frac{-\pi}{4}$ $c=\frac{4\pi}{4}$ $c=\pi$ $d=1$	$y=5\cos(4x+\pi)+1$
6.) amplitude = ½ , period = 2π , right by $\frac{\pi}{3}$, down by 4	cosine	$a=\frac{1}{2}$ $b=\frac{2\pi}{2\pi}$ $b=1$ $c=-1\cdot\frac{\pi}{3}$ $c=-\frac{\pi}{3}$ $d=-4$	$y=\frac{1}{2}\cos\left(x-\frac{\pi}{3}\right)-4$
7.) amplitude = 2 , period = $\frac{\pi}{4}$, no phase shift , up by 3	sine	$a=2$ $b=\frac{2\pi}{\frac{\pi}{4}}$ $b=8$ $c=-8\cdot 0$ $c=0$ $d=3$	$y=2\sin(8x)+3$
8.) 	Cosine amp=3 period=4π left π down 1	$a=3$ $b=\frac{2\pi}{4\pi}$ $b=\frac{1}{2}$ $c=-\frac{1}{2}\cdot-\pi$ $c=\frac{\pi}{2}$ $d=-1$	$y=3\cos\left(\frac{1}{2}x+\frac{\pi}{2}\right)-1$