Finding Amplitude, Period and Midline of a Sinusoidal Function

Quick Review	
Amplitude is half the height of the wave. The amplitude of the basic sinusoidal function is 1, so the *amplitude* is equivalent to the vertical stretch of the function.	Example: $f(x)=4\cos(3x)+25$ $g(x)=4\sin(3x)+25$ The *amplitude* for both of these functions is 4.
A function is *periodic* if its values repeat at regular intervals: $f(x+c)=f(x)$. The *period* of a sinusoidal function is the smallest interval *c* for which the graph completes one full cycle. The *period* of the basic sinusoidal functions is 2π.	Example: $f(x)=4\cos(3x)+25$ $g(x)=4\sin(3x)+25$ The *period* for both of these functions is $\frac{2\pi}{3}$.
The *midline* of a sinusoidal function is the horizontal line midway between the function's maximum and minimum values. It is equivalent to the vertical shift. The *midline* of the basic functions is $y=0$.	Example: $f(x)=4\cos(3x)+25$ $g(x)=4\sin(3x)+25$ The *midline* for both of these functions is $y=25$.

Problems

Find the amplitude, period and midline of each of the following functions.

1. $f(x)=\cos\left(\frac{2x}{3}\right)$

2. $f(x)=5\sin(7x)-13$

3. $f(x)=5-2\cos(x)$

4. $g(x)=\frac{4}{5}\sin(2x)+1$

5. $h(x) = \frac{1}{3}\sin\left(\frac{x}{3}\right) + 18$

6. $f(x) = 12 + \cos\left(\frac{2\pi}{3}x\right)$

7. $g(x) = 3\cos(x)$

8. $h(x) = 3\sin\left(\frac{\pi}{3}x\right) - 4$

9. $f(x) = \sin(x) - \pi$

10. $f(x) = \pi\cos(\pi x)$