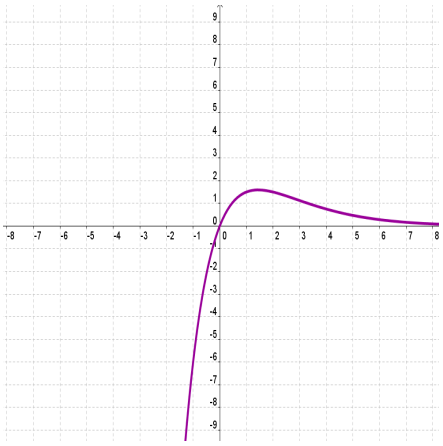
MHF4U:Grade12 Advanced Functions (Public)

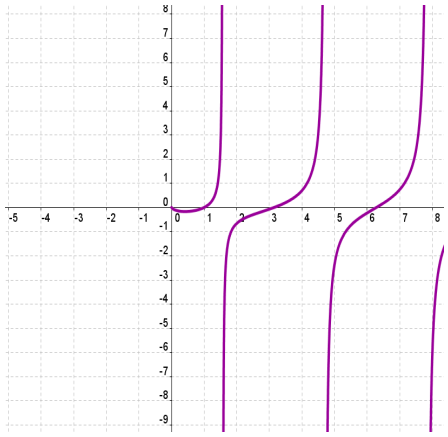
Unit 5: Characteristics of Functions

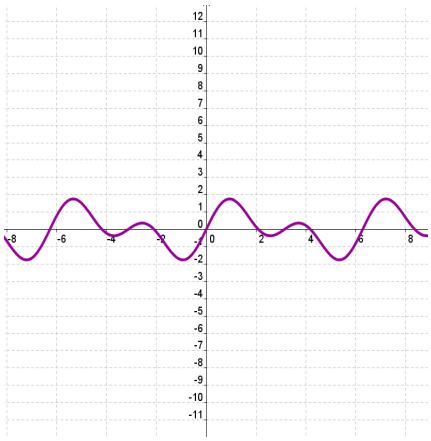
Activity 5: Investigating Compound Functions

Formative Assignment

1) Determine the types of base functions used to create each of the following graphs.







2) Given the functions $f(x)=3x^3-4x$ and $g(x)=2x^2-3$ determine an equation for:
   a. $(f+g)(x)$
   b. $(f-g)(x)$
   c. $(fg)(x)$
   d. $(f\div g)(x)$
   e. $(g\div f)(x)$

3) Complete the following table.

Characteristic	$f(x)=\frac{1}{x}-x$	$g(x)=2^{-x}\sin(4x)+1$	$f(x)=\log x+x^3$
Domain			
Range			
Does it have a max?			
Does it have a min?			

Number of zeros			
Asymptotes			

4) The number of snakes on Snake Island in Georgian Bay any year is dependent on two sources. Every year, through reproduction, the number of snakes on the island increase by 40 individuals. Snakes caught on other islands are also transplanted to Snake Island. The frequency of transplantation depends on the year and can be modelled by the function $g(x) = 10\sin\left[\frac{\pi}{6}x\right] + 30$, where $g(x)$ represents the number of individuals transplanted in year x. Determine a function that will model the population of snakes on the island and takes into account both reproduction and transplantation.