1. [20 points] **You do not need to show any work for this problem**, but you should write your answers *in the spaces provided.*

   a. [2 points] Let $j(x)$ be an odd function with domain $(-\infty, \infty)$ and $j(-1) = 4$. Evaluate $j(0)$ and $j(1)$.

   $j(0) =$ ______________, *and* $j(1) =$ ______________

   b. [2 points] Let $f(x) = \log x$. Write down an expression for a function $g(x)$ which is a transformation of $f(x)$ that has a vertical asymptote at $x = -2$.

   $g(x) =$ ____________________________

   c. [3 points] Let $f(x) = \log x$ and $h(x) = \log(0.5x)$. By how much, and in which direction, must the graph of $y = f(x)$ be shifted *vertically* to obtain the graph of $y = h(x)$? Your answer must be **exact**.

   The graph of $y = f(x)$ *must be shifted vertically* ______________ *by* ______________

   d. [4 points] Let $k(x) = b\sin(x) - 10$ (for some constant b) be a periodic function with amplitude 4. List *all* possible values of b, and find the equation of the midline of $y = k(x)$.

   The midline is ____________________, *and* b *could be* ____________________________

   e. [3 points] Consider the graph of $y = \tan(x + 1)$. Write down the equations of *one* horizontal asymptote and *one* vertical asymptote of this graph, or write NONE if there are no asymptotes of a particular type. Your answer must be **exact**.

   A vertical asymptote is _________________, *and a horizontal asymptote is* _________________

   f. [6 points] Let $R(x) = 2L(7x - 3) + 4$. List the transformations you need to apply to the graph of $y = L(x)$, in order, to obtain the graph of $y = R(x)$. Fill each space with either a *number* **or** *one of the phrases below*, as appropriate.

SHIFT IT HORIZONTALLY TO THE RIGHT	SHIFT IT HORIZONTALLY TO THE LEFT	SHIFT IT VERTICALLY UPWARDS	SHIFT IT VERTICALLY DOWNWARDS
COMPRESS IT HORIZONTALLY	STRETCH IT HORIZONTALLY	COMPRESS IT VERTICALLY	STRETCH IT VERTICALLY

   To get the graph of $y = R(x)$*, we start with the graph of* $y = L(x)$*.*

   ***First**, we* ____ *by* ______________,

   ***and then** we* ____ *by* ______________,

   ***and then** we* ____ *by* ______________,

   ***and then** we* ____ *by* ______________