Inequalities of Combined functions

Date:

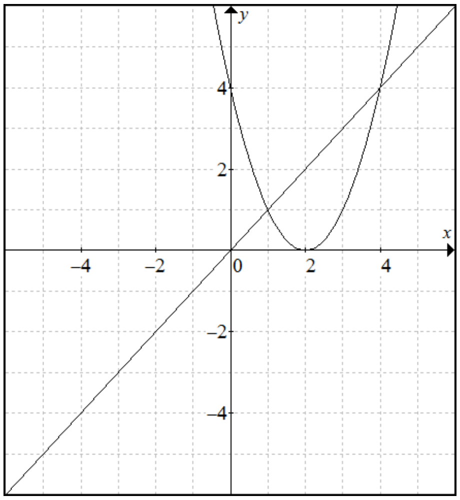
Solutions to problems involving combined functions can sometimes lead to a range of acceptable answers. When this happens, techniques for solving inequalities are applied.

There are a number of ways to graphically illustrate an inequality involving a combined function.

Algebraic and graphical representations of inequalities can be useful for solving problems involving combined functions.

Example 1

Let $f(x) = x$ and $g(x) = (x-2)^2$

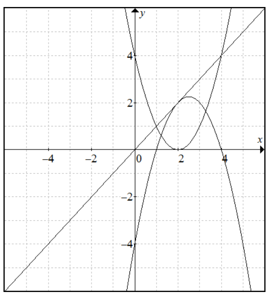


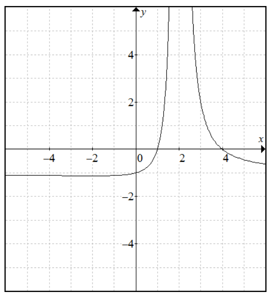
a) Given the functions on the same set of axes. Identify the points of intersection.

b) Illustrate the regions for which

i) $f(x) > g(x)$

ii) $g(x) > f(x)$

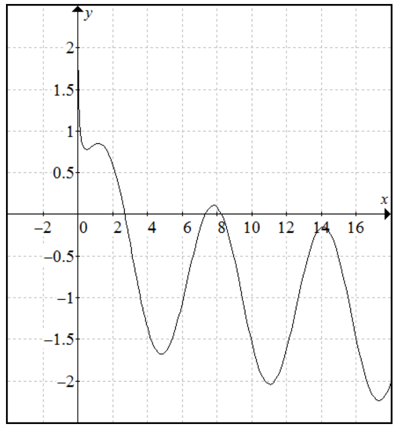


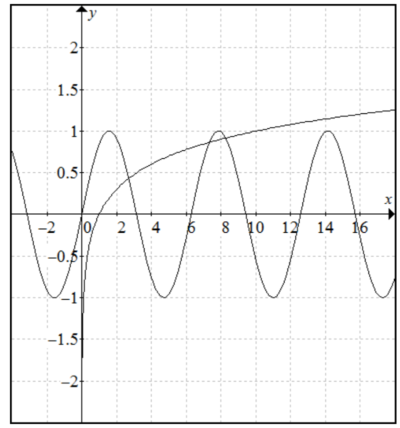


Inequalities of Combined functions Date:

Example 2

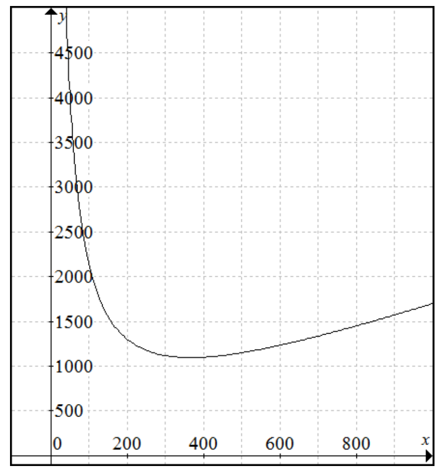
Solve $\sin x - \log x > 0$





Example 3

A computer store's cost, *C*, for shipping and storing *n* computers can be modeled by the function $c(n) = 1.5n + \frac{200000}{n}$. The storage capacity of the store's warehouse is 750 units. Given the graph of the combined function,



a) Explain the shape and determine the domain for this problem.
b) Determine the minimum and maximum number of computers that can be ordered at anyone time to keep costs below $1500, assuming that inventory has fallen to zero.
c) What is the optimum order size that will minimize storage costs?

Homework:
P. 457 #1-4, 7, 10-12, 16