

1. The function f is decreasing and is defined for all real numbers. The table gives values for $f(x)$ at selected values of x .

x	-2	-1	0	1	2
$f(x)$	14	7	3.5	1.75	0.875

The function g is given by $g(x) = -0.167x^3 + x^2 - 1.834$.

A.

- i. The function h is defined by $h(x) = (g \circ f)(x) = g(f(x))$. Find the value of $h(1)$ as a decimal approximation, or indicate that it is not defined. Show the work that leads to your answer.
- ii. Find the value of $f^{-1}(3.5)$, or indicate that it is not defined.

B.

- i. Find all values of x , as decimal approximations, for which $g(x) = 0$, or indicate that there are no such values.
- ii. Determine the end behavior of g as x increases without bound. Express your answer using the mathematical notation of a limit.

C.

- i. Based on the table, which of the following function types best models function f : linear, quadratic, exponential, or logarithmic?
- ii. Give a reason for your answer in part C (i) based on the relationship between the change in the output values of f and the change in the input values of f . Refer to the values in the table in your reasoning.