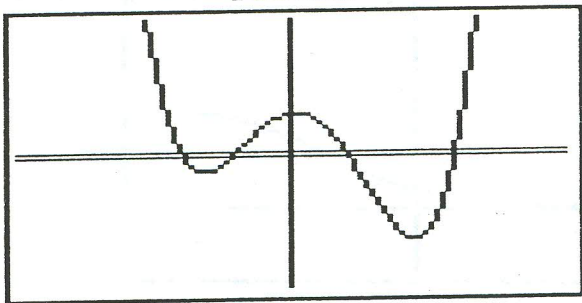


①

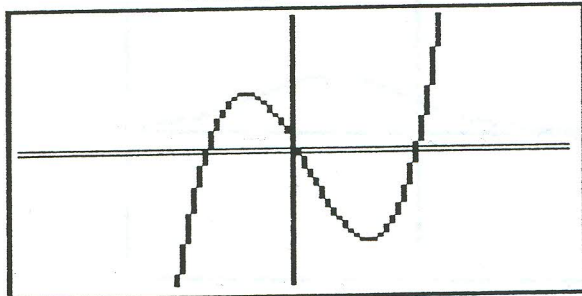
$$f(x) = \frac{(x^2-1)(x+2)(x-3)}{2}$$

The graph of the function has two relative minima and one relative maximum.

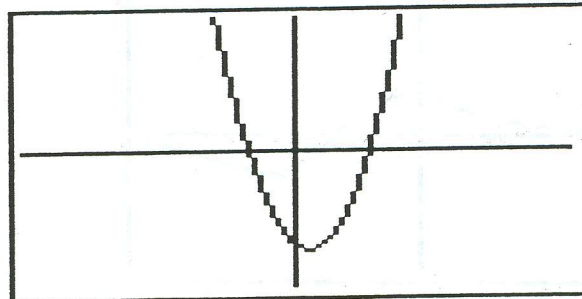
Function



First Derivative



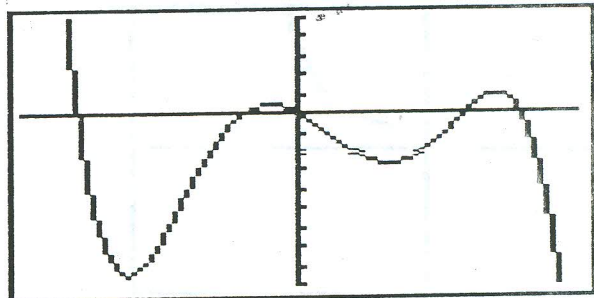
Second Derivative



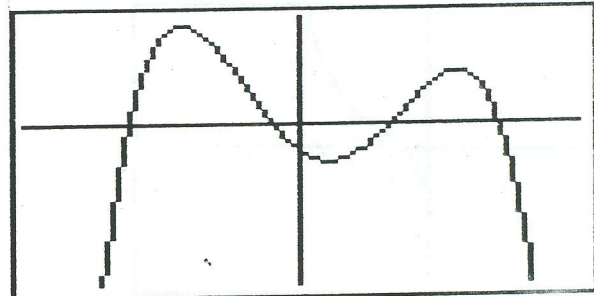
$$f(x) = \frac{x(x^2-16)(x+1)(x-3)}{-3}$$

The graph of the function has two relative maxima and two relative minima.

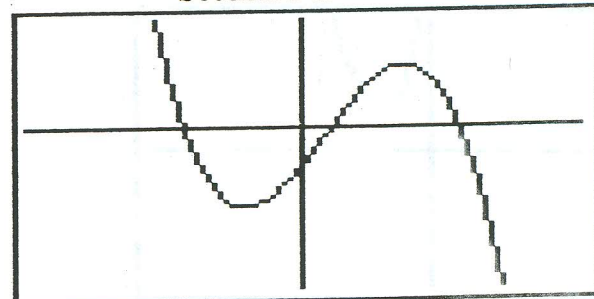
Function



First Derivative



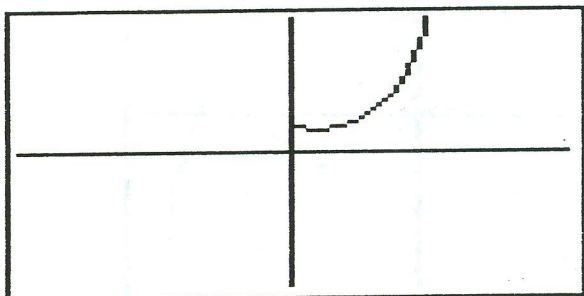
Second Derivative



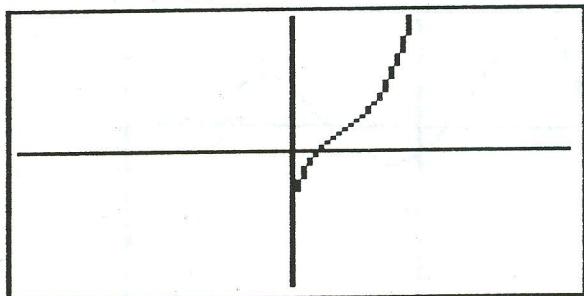
$$f(x) = x^x$$

The function is always concave up and the limit of $f(x)$ as x approaches 0 is 1.

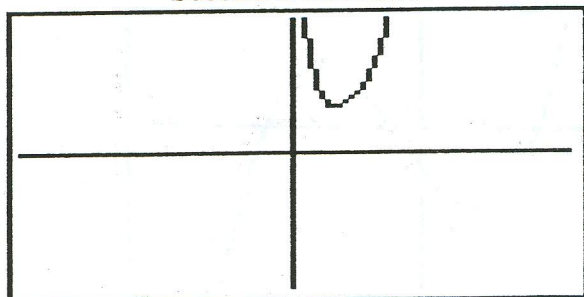
Function



First Derivative



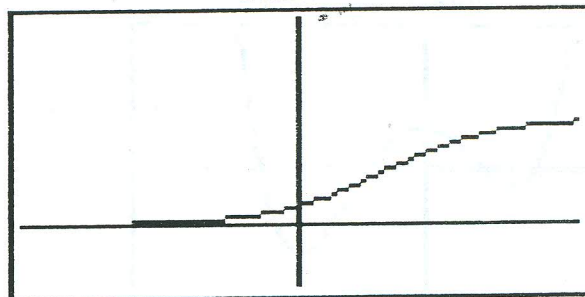
Second Derivative



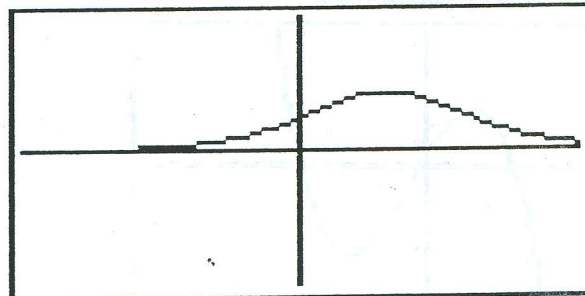
$$f(x) = \frac{1}{0.2 + 2^{-.5x}}$$

The function is a logistic curve, always increasing, with one inflection point.

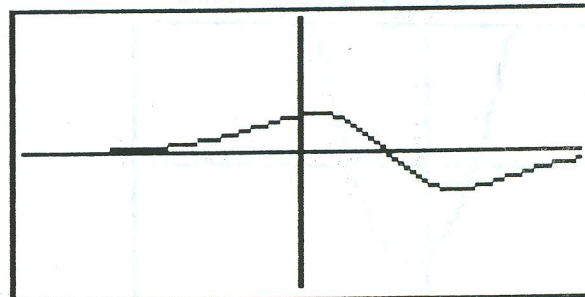
Function



First Derivative



Second Derivative



3

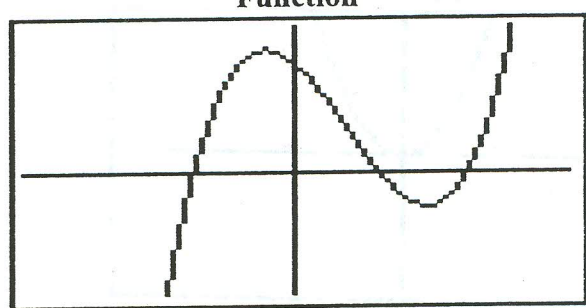
$$f(x) = .5(x+3)(2x-5)(x-5)$$

$$f(x) = \sin(x)$$

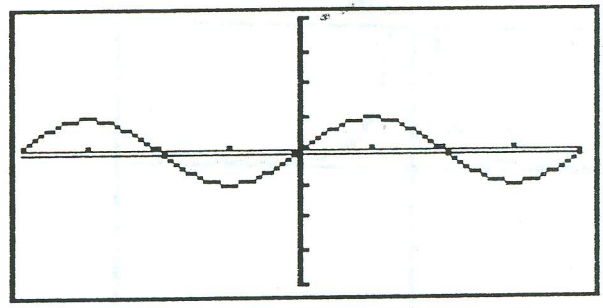
The graph has three zeros, one maximum, one minimum, and one point of inflection.

The function is periodic with domain \mathbb{R} and range $[-1,1]$.

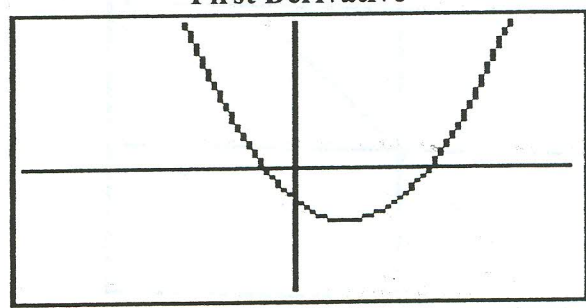
Function



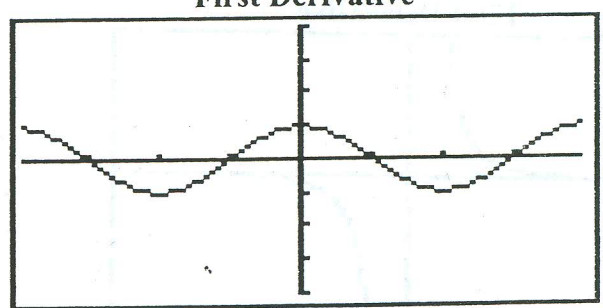
Function



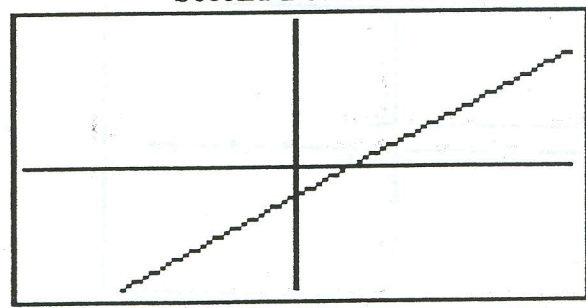
First Derivative



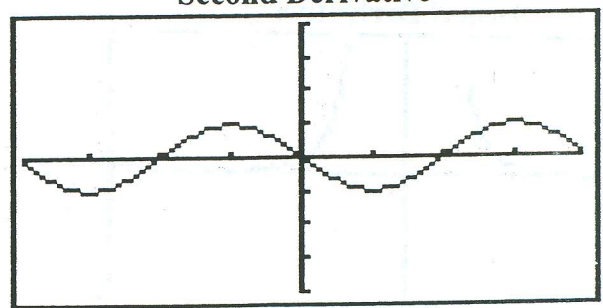
First Derivative



Second Derivative



Second Derivative

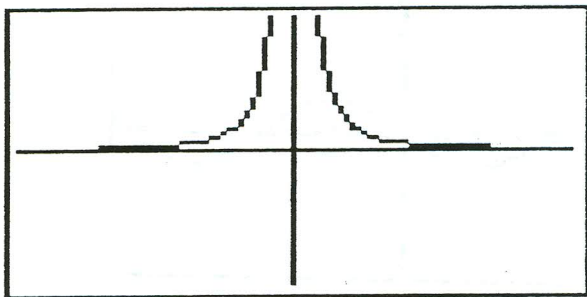


4

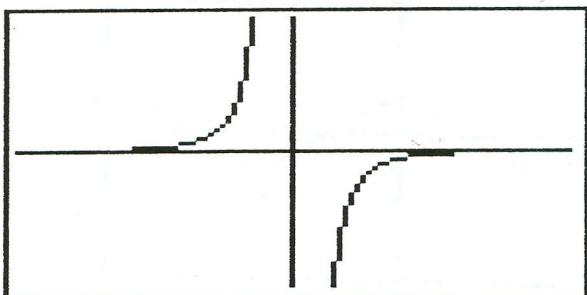
$$f(x) = \frac{1}{x^2}$$

The graph of the function has the x- and y-axes as horizontal and vertical asymptotes.

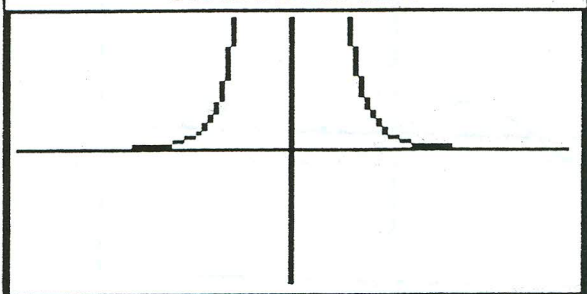
Function



First Derivative



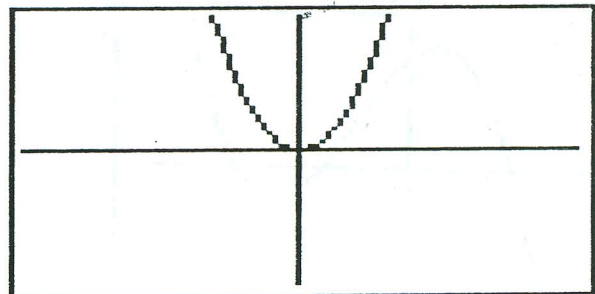
Second Derivative



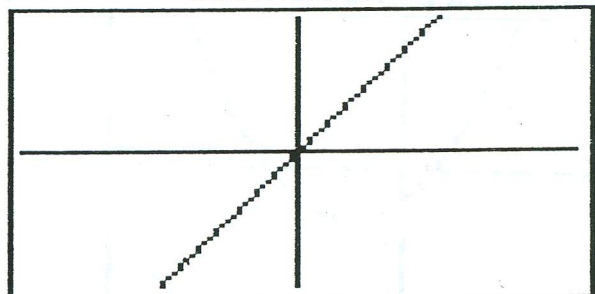
$$f(x) = x^2$$

The graph of the function has one absolute minimum and no points of inflection.

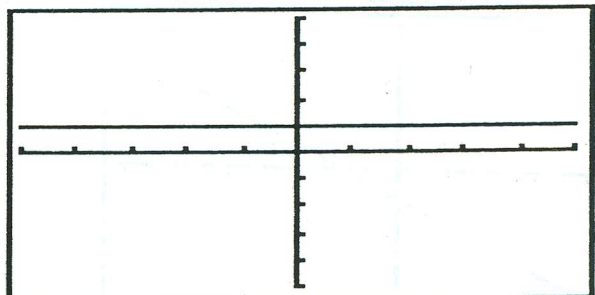
Function



First Derivative



Second Derivative

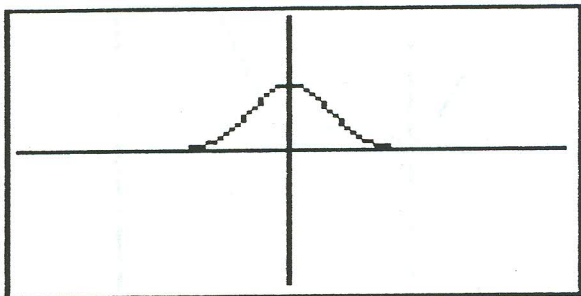


5

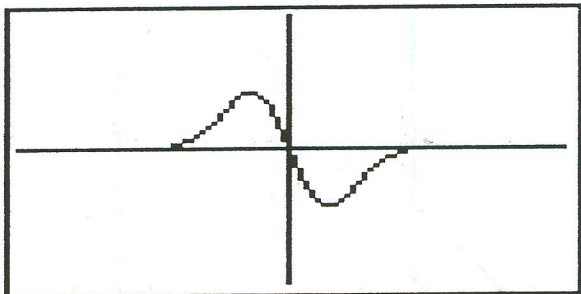
$$f(x) = e^{-x^2}$$

The graph of the function has one absolute maximum and the x-axis as an asymptote.

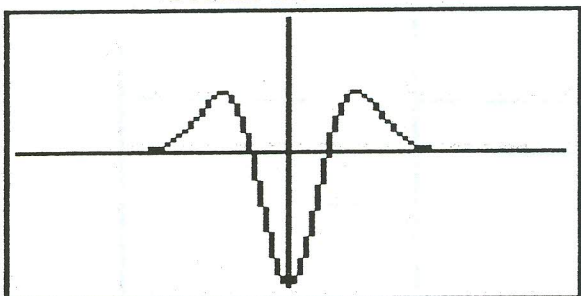
Function



First Derivative



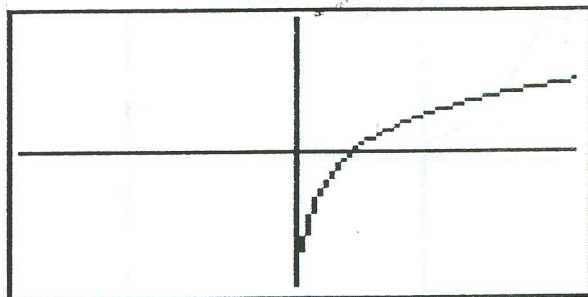
Second Derivative



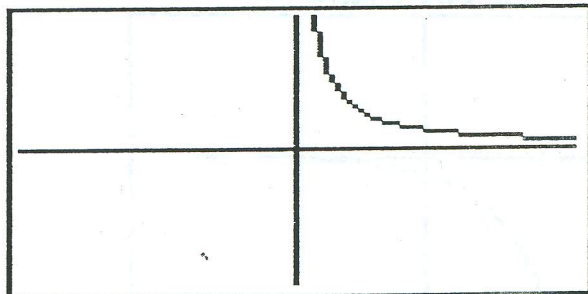
$$f(x) = \ln(x)$$

The graph of the function is always increasing and has the y-axis as an asymptote.

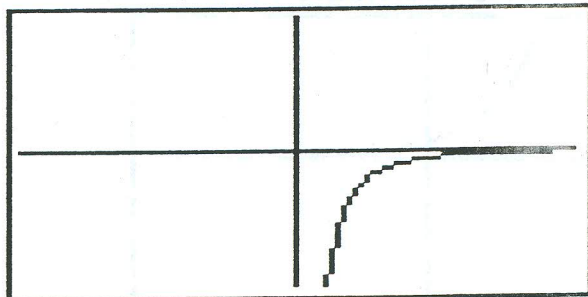
Function



First Derivative



Second Derivative

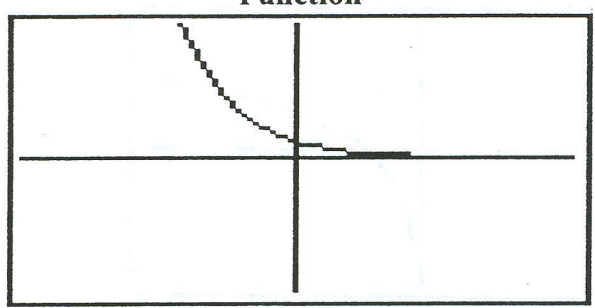


6

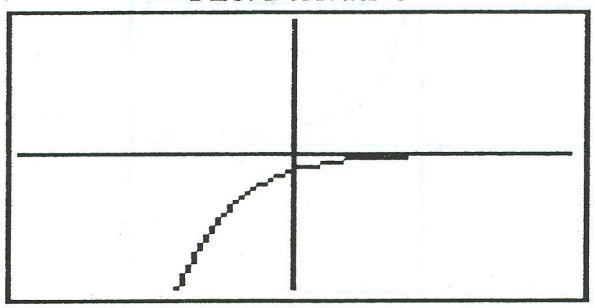
$$f(x) = e^{-x}$$

The graph of the function is always decreasing and has the x-axis as an asymptote.

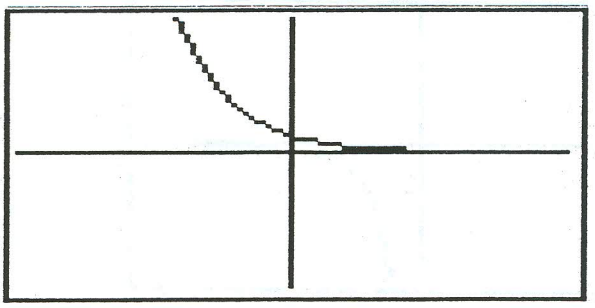
Function



First Derivative



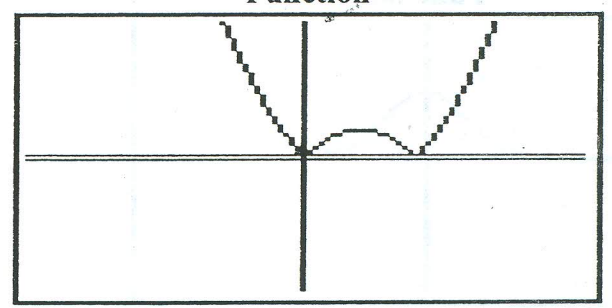
Second Derivative



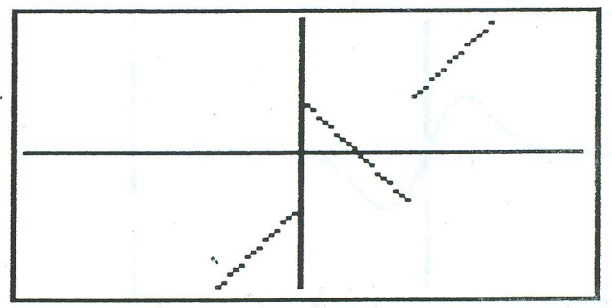
$$f(x) = |x^2 - 2x|$$

The graph of the function has one relative maximum and two relative minima.

Function



First Derivative



Second Derivative

