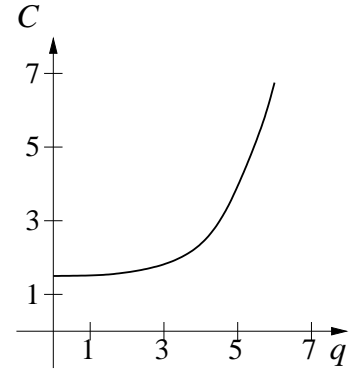


1. (3 points) Suppose that the cost C (in 100s of dollars) of manufacturing q widgets is given as a function of q (in 100s of widgets) by the graph to the right. If the widget manufacturing company wants to minimize the *cost per widget*, (approximately) how many widgets should it make? Why?



2. (3 points) Use calculus to find the absolute maximum and minimum values of the function $f(x) = x \ln(x) - x$ on $0 < x \leq 5$.

3. (2 points) A hot-air balloon is launched from a patch of flat ground on a windy day. As it rises, the wind pushes it at a 45° angle towards a group of onlookers who are standing 50 feet away. Imagining that you might want to find the minimum distance from the onlookers to the balloon, write an equation that gives that distance. Be sure that it is clear what your variables represent. *Do Not Actually Find The Minimum Distance!*