

### BC CalcLog 3.1

$f(x)$  is a continuous defined for  $-6 \leq x \leq 6$  which has the following properties:

- I. The absolute minimum of  $f(x)$  occurs at  $(6, -4)$ .
- II.  $f'(1) = 0$ .
- III.  $\lim_{x \rightarrow 0} f'(x) = +\infty$
- IV.  $f''(x) < 0$  for  $0 < x < 6$ .
- V.  $f(x)$  is an odd function, thus  $f(-x) = -f(x)$ .

1. Find  $f(0)$ .
2. Find the  $x$ -coordinate of a relative maximum point of  $f(x)$ .
3. Find all values of  $x$  for which  $f(x)$  is both increasing and concave down.
4. Evaluate  $\int_{-6}^6 f(x) dx$ .
5. Based on the information above, sketch a graph which has the properties of  $f(x)$ . Use the axes provided.