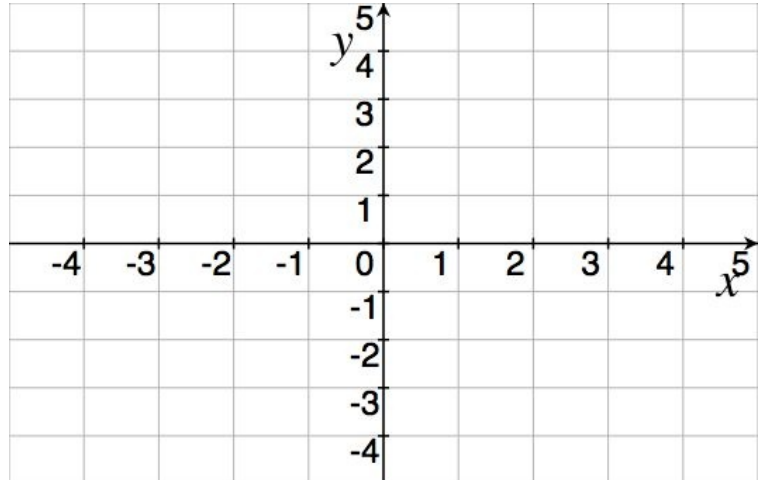


# TMATH 124: Quiz 8

Reasonable supporting work must be shown to earn credit.

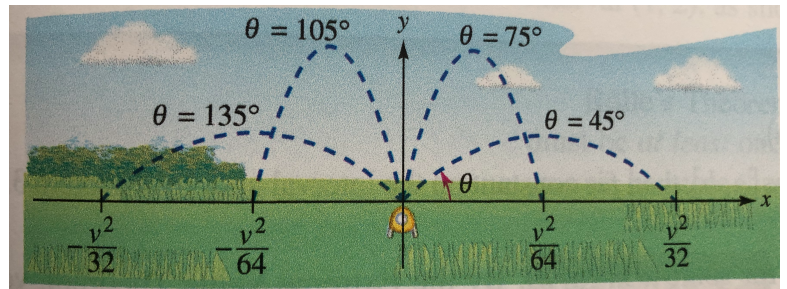
1. [5] Sketch the graph of a function  $f$  that satisfies *all* of the following.

- (a)  $f$  is continuous on  $[-3, 4]$
- (b)  $x = 2$  is a maximum
- (c)  $f'(2)$  does not exist
- (d)  $f'(-2) = 0$
- (e)  $x = -2$  is *not* a maximum or minimum



2. A sprinkler is constructed in such a way that  $\frac{d\theta}{dt}$  is constant, where  $\theta$  ranges between  $45^\circ$  to  $135^\circ$ . The distance the water travels horizontally is  $x = \frac{v^2 \sin(2\theta)}{32}$  where  $v$  is the speed of the water that is held constant.

- (a) [1] Describe what  $\frac{d\theta}{dt}$  is, consider providing the units in the explanation.



- (b) [1] What part of the lawn receives the least amount of water?

- (c) [3] Explain & justify your answer above analytically.