

# Day 11 (July 13, 2015)

1. Alice is on an ATV! She is at Haus A located at  $(-5, 12)$ . She notices she's running out of gas and needs to return the ATV to Haus B at  $(3, 4)$ . These coordinates are in miles.
- a. Alice wants to visit the beautiful Xaxis River but only has enough gas to travel 18 miles. Show that she can visit  $(0, 0)$  and still return to Haus B. Can she visit  $(1, 0)$ ?  $(2, 0)$ ?

$$\sqrt{(-5-0)^2 + (12-0)^2} + \sqrt{(3-0)^2 + (4-0)^2} \stackrel{?}{\leq} 18$$

$$\sqrt{(-5-x)^2 + (12-y)^2} + \sqrt{(3-x)^2 + (4-y)^2} \stackrel{?}{\leq} 18$$

$\begin{array}{cc} \uparrow & \uparrow \\ x & y \end{array}$

Generalize to

$$\sqrt{(-5-x)^2 + (12-y)^2} + \sqrt{(3-x)^2 + (4-y)^2} \leq 18$$