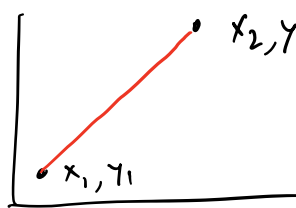
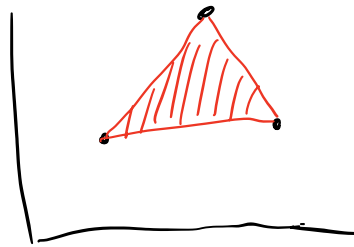


Troop mobilization

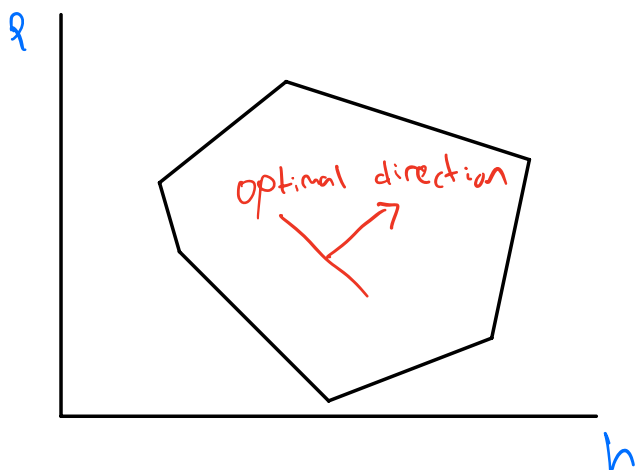
- For all troops (C_i, h_i, P_i) convert to 2d points by dividing by cost
 $\left(\frac{C_i}{P_i}, \frac{h_i}{P_i}\right)$ for all troops we know how much health per unit we get

- If we have 2-points  then any point in the line segment created can also be used

- This is also true for any set of points
 In fact any point within the convex hull of set of points can also be achieved

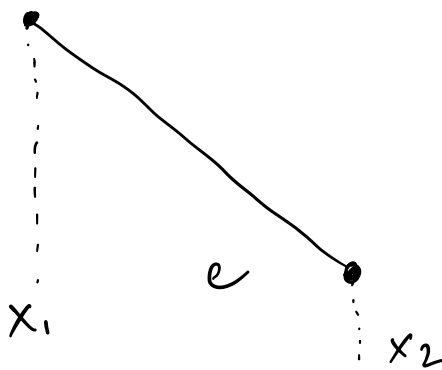


- Lets Assume we only have a total budget of 1. & we want to maximize h.p Picking some linear combination of points
- After finding the convex Hull of the set of points we have to find the largest h.p that is possible.
- The optimal direction is roughly up & to the right, but not absolute distance from center since a point like $(3,3)$ is better than $(5,1)$



- the optimal answer always lies along an edge of the convex hull if we Assume it is on the inside & we can still move up to the right then it is not optimal.

- If we fix some edge the optimal answer is a point in the line



- we can assume the function is concave (I don't have proof) so we can use binary search to find the maximum value

- Now we just do that for all edges and take the maximum

- The final answer is $\text{optimal value} \cdot b^2$ since both x & y were divided by cost