

Problem 1. Support Vector Machines

First map from $[x_1, x_2]$ to $[x_1, x_1x_2]$ as following:

Negative: $[-1, -1]$ maps to $[-1, +1]$

Positive: $[-1, +1]$ maps to $[-1, -1]$

Positive: $[+1, -1]$ maps to $[+1, -1]$

Negative: $[+1, +1]$ maps to $[+1, +1]$

Here, the positive examples have x_1x_2 equals to -1 and negative examples have x_1x_2 equals to $+1$. Therefore, the maximal margin separator is $x_1x_2 = 0$, and the margin is 1 .

