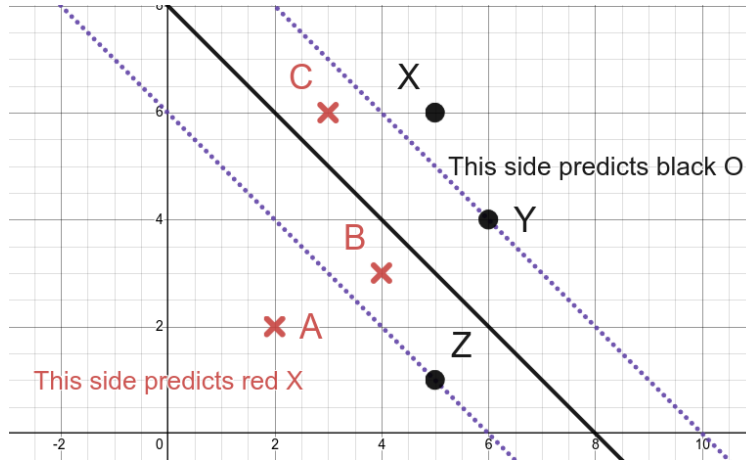

CMSE381 - Quiz 9

Print Name: _____



1. The figure above shows a support vector classifier with several data points predicting red X or black O. For each question below, circle all that apply.

(a) For the figure above, which data points violate the margin (meaning are on or on the wrong side of the margin) but are not misclassified?

2pts

A ☐ B ☒ C ☐ X ☐ Y ☐ Z

(b) For the figure above, which data points are support vectors?

4pts

A ☐ B ☒ C ☒ X ☒ Y ☒ Z

(c) Suppose the classification hyperplane is $\frac{8}{\sqrt{2}} - \frac{1}{\sqrt{2}}X_1 - \frac{1}{\sqrt{2}}X_2$ and $M = \sqrt{2}$. What is the smallest ϵ for the point C to satisfy the SVC constraint?

4pts

c: (3, 6) $\gamma_C = 1$, so the constraint is $(1)(\frac{8}{\sqrt{2}} - \frac{3}{\sqrt{2}} - \frac{6}{\sqrt{2}}) \geq M(1-\epsilon)$

2

$$\Leftrightarrow -\frac{1}{\sqrt{2}} \geq \sqrt{2}(1-\epsilon)$$

$$\Leftrightarrow \epsilon \geq 3/2$$