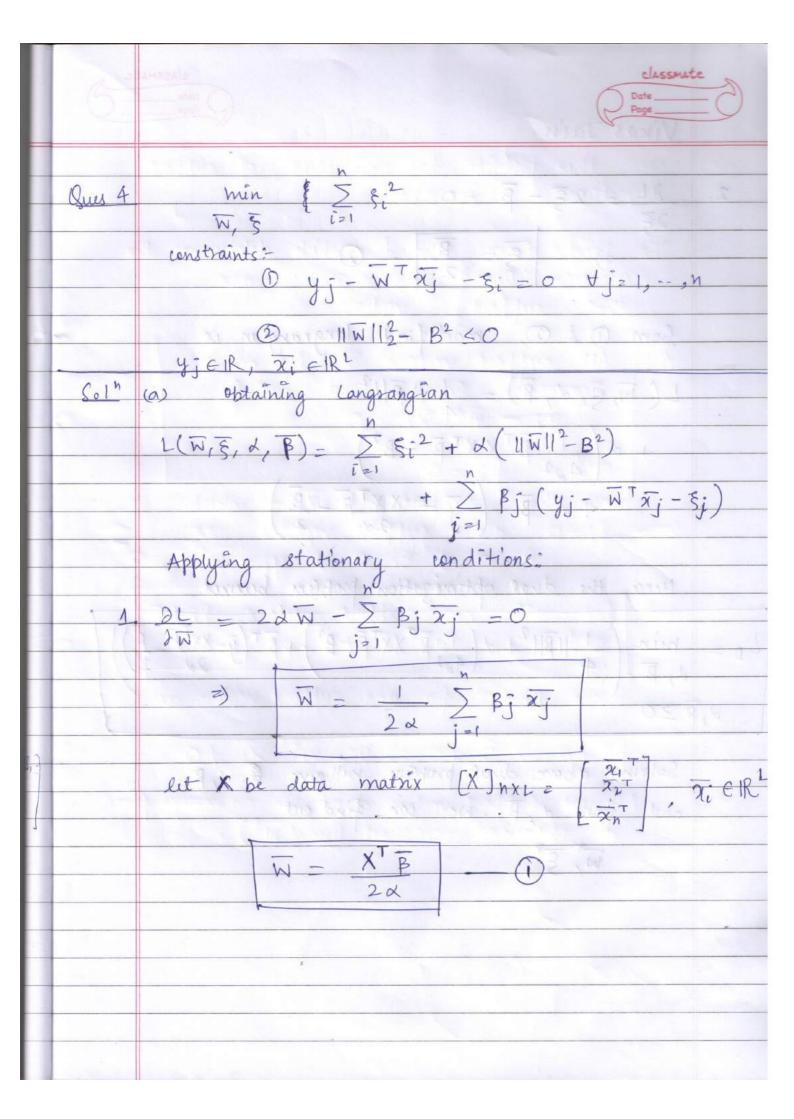
=) K(\(\bar{2}, \bar{3}\) is a kernel.

(C) K(\$\frac{1}{2},\frac{3}{2}) = \sum \text{min (17il, 13il)} lut, x, z e Zod 2 x We will tryto find a mapping of (x) s.t. $K(\bar{x}_1\bar{3}) = \langle \phi(\bar{x}), \phi(\bar{z}) \rangle$ If such a mapping exist, then $K(\tilde{n}, \tilde{3})$ satisfies $L^{T}K(\tilde{x}, \tilde{3})$ $L^{T}K(\tilde{x}, \tilde$ Mapping o: let N be the max value from all components of n vectors (EX) used to obtain k. Define ptobe p: X -> {0,13 NXd then $(\overline{x}) = \{ 2, 1, 2, \dots, 2, d \}$ $(\overline{x}) = \{ 2, 1, \dots, 1, 0, 0, \dots, 0 \}$ 1,1,1,1,0,-03 New p(x) p(z) = 2 min (|xi|, |3i|)

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Н		$k(\bar{x},\bar{3}) = \langle \phi(\bar{x}), \phi(\bar{z}) \rangle$
Н		and hence $k(\bar{x},\bar{3})$ is a keynel.
Н		rece vence ig 175) so Runel.
П		
Н		
-		
Н		
	*	



(b) yes, this problem has equivalent of suppost vectors as in SVM The points from the 2 which determines the regression line (yi= WTXi) are the support vectors (i) All support vectors \$\frac{1}{2}i lie on the regression line and satisfy

yi - W*T \(\overline{\chi} = 0 \end{array} hence the support vectors x; for which $\beta_i = 0$ are suppost vectors as $\beta_i = 0 \Rightarrow \beta_i = 0 \Rightarrow y_i = \overline{W}^* \overline{x}_i = 0$ ii) For all non-support vectors, Bi + O and yi- W*T Zi =0. hence Bito for non support vectors as βi +0 => 5i +0 => yi-W*T xv +0. All non support vectors. don't lie on margin plan so obtained regression line (W*)

