Decision Boundary

$W.X + W_0 = 0$

$\sum_{i=1}^{4} \alpha_i . y_i . \phi(X^i) . \phi(X) + W_0 = 0$

$\alpha_1 . y_1 . \phi(< 1, 0, 4, 0, 0, 2\sqrt{2} >) . \phi(< 1, x_1^2, x_2^2, \sqrt{2}. x_1 . x_2, \sqrt{2}. x_1, \sqrt{2}. x_2 >)$
$+\alpha_2 . y_2 . \phi(< 1, 4, 0, 0, 2\sqrt{2}, 0 >) . \phi(< 1, x_1^2, x_2^2, \sqrt{2}. x_1 . x_2, \sqrt{2}. x_1, \sqrt{2}. x_2 >)$
$+\alpha_3 . y_3 . \phi(< 1, 0, 0, 0, 0, 0 >) . \phi(< 1, x_1^2, x_2^2, \sqrt{2}. x_1 . x_2, \sqrt{2}. x_1, \sqrt{2}. x_2 >)$
$+\alpha_4 . y_4 . \phi(< 1, 4, 4, 4\sqrt{2}, 2\sqrt{2}, 2\sqrt{2} >) . \phi(< 1, x_1^2, x_2^2, \sqrt{2}. x_1 . x_2, \sqrt{2}. x_1, \sqrt{2}. x_2 >) + W_0 = 0$

$1 - \frac{1}{3}x_1^2 - \frac{1}{3}x_2^2 + 8.x_1 . x_2 + 8.x_1 + 8.x_2 = 0$

$x_1^2 + x_2^2 + 24.x_1 . x_2 + 24.x_1 + 24.x_2 - 3 = 0$ is the decision boundary.