Quiz Problem 3

If $K = 3$, and we want to know the predicted value at $(0,0,0)$ we need to find the three closest points to $(0,0,0)$ and average their Y values.

$\text{dist}((0,0,0),(0,3,6)) \Rightarrow 3$

$\text{dist}((0,0,0),(2,0,0)) \Rightarrow 2$

$\text{dist}((0,0,0),(0,1,3)) \Rightarrow \sqrt{10}$

$\text{dist}((0,0,0),(0,1,2)) \Rightarrow \sqrt{5}$

$\text{dist}((0,0,0),(-1,0,1)) \Rightarrow \sqrt{2}$

$\text{dist}((0,0,0),(1,1,1)) \Rightarrow \sqrt{3}$

The three closest points are $(2,0,0)$, $(-1,0,1)$, $(1,1,1)$

Their respective y-values are

-2, 5.5, and 4.6 respectively

$$\hat{f}((0,0,0)) = \frac{1}{3}(-2+5.5+4.6) = \boxed{2.7}$$