



$$a. Y = b_0 + b_1 \cdot x + b_2 \cdot \text{MnSOD} + b_3 \cdot x \cdot \text{MnSOD} + e$$

$e$ : regular error

$$b. \hat{y} = 86.03 + 114.49x + 266.39 \cdot \text{MnSOD} + 806.66 \cdot x \cdot \text{MnSOD}$$

$$c. H_0: b_3 = 0, H_A: b_3 \neq 0$$

$$t\text{-test} = 14.888 \quad p\text{-value} < 0.01$$

So we reject null and conclude yes, they <sup>interact</sup>

$$d. \text{Rate of increase: } \left. \frac{\partial \hat{y}}{\partial x} \right|_{\text{MnSOD}=1} = 114.49 + 806.66 = 921.15$$

$$e. \text{Rate of increase: } \left. \frac{\partial \hat{y}}{\partial x} \right|_{\text{MnSOD}=0} = 114.49$$

So for MnSOD type gne, the rate of increase is much higher, since  $921.15 > 114.49$