3d) Test at 1\% significance level
slope of regression line positive

\[ H_0: \beta_1 = 0 \]
\[ H_1: \beta_1 > 0 \]

\[ T = \frac{\hat{\beta}_1 - \beta_0}{S / \sqrt{SS_{xx}}} \]

\[ S^2 = \frac{\text{SSE}}{n-2} \quad \text{SSE} = \text{SS}_y - \hat{\beta}_1 \text{SS}_{xy} \]

\[ \text{SSE} = 74.1 - (-.493)(-14.1) = 4.537 \]

\[ S = \sqrt{\frac{4.537}{8}} = .7531 \]

\[ T = (\hat{\beta}_1) - 9.78 \quad \frac{.7531/\sqrt{286.1}}{\sqrt{4.537/8}} = -230.719 \]

\[ T_{8, .01} = 2.846 \]

Fail to reject the null hypothesis, cannot conclude slope positive. Value is negative and would expect it to be...