c The two variables-added-in-order tests are:

  i $H_0: \beta_2 = 0$ vs. $H_A: \beta_2 \neq 0$ in the model $Y = \beta_0 + \beta_2 X_2 + E$.
    From part (a) above: $F = 0.59$;   df: 1, 51; $P > 0.25$.
    At $\alpha = 0.05$, we would not reject H_0 and conclude that $\beta_2 = 0$.

  ii $H_0: \beta_1 = 0$ vs. $H_A: \beta_1 \neq 0$ in the model $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + E$.
    $F(X_1 | X_2) = 11.76$ df: 1, 50
    $P = 0.0012$
    At $\alpha = 0.05$, we would reject H_0 and conclude that $\beta_1 \neq 0$ in the model $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + E$.

d Using Type III sum of squares provided in the SAS output, the variables-added-last tests are:

Source	df	SS	MS	F
$X_1 \mid X_2$	1	2596.024	2596.024	11.76
$X_2 \mid X_1$	1	1218.014	1218.014	5.52
Residual	50	11037.298	220.746	
Total	52	13791.17		

e X_2 alone does not significantly aid in predicting Y. X_2 is important when added to a model that already contains X_1.

f X_1 and X_2 both appear to be necessary, according to the variables-added-in-order and variables-added-last tests.