$$\begin{aligned}\texttt{sales} &= \beta_0 + \beta_1 \times \texttt{TV} + \beta_2 \times \texttt{radio} + \beta_3 \times (\texttt{radio} \times \texttt{TV}) + \epsilon \\ &= \beta_0 + (\beta_1 + \beta_3 \times \texttt{radio}) \times \texttt{TV} + \beta_2 \times \texttt{radio} + \epsilon.\end{aligned}$$

Results:

	Coefficient	Std. Error	t-statistic	p-value
Intercept	6.7502	0.248	27.23	< 0.0001
TV	0.0191	0.002	12.70	< 0.0001
radio	0.0289	0.009	3.24	0.0014
TV×radio	0.0011	0.000	20.73	< 0.0001

3.5 Review Questions

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3.5.R1

1/1 point (graded)

According to the model for sales vs TV interacted with radio, what is the effect of an additional $1 of radio advertising if TV=$50? (with 4 decimal accuracy)

0.0839

✔ **Answer:** .0839

0.0289 + (0.0011 × 50) =
0.0839

0.0839

3.5.R2

1/1 point (graded)

What if TV=$250? (with 4 decimal accuracy)

0.3039

✔ **Answer:** .3039

0.0289 + (0.0011 × 250) =
0.3039

0.3039

Explanation

The effect of an additional unit of radio is .0289 plus .0011 times TV.