

PRINTABLE VERSION

Quiz 12

You scored 100 out of 100

Question 1

Your answer is CORRECT.

Which of the following would be the LSRL for the given data?

x	3	4	7	13	15	16
y	41	37	26	21	24	11

- a) ☐ $\hat{y} = 1.743x + 43.51$
- b) ☒ $\hat{y} = -1.743x + 43.51$
- c) ☐ $\hat{y} = -43.51x - 1.743$
- d) ☐ $\hat{y} = 43.51x - 1.743$
- e) ☐ None of the above

Question 2

Your answer is CORRECT.

Determine the correlation coefficient for the data shown in this table:

x	2	4	10	15	13	16
y	22	29	28	40	34	43

- a) ☐ 0.8332
- b) ☒ 0.9128
- c) ☐ 0.4564
- d) ☐ -0.9128
- e) ☐ -0.8332

f) ☐ None of the above

Question 3

Your answer is CORRECT.

Suppose you have the following data:

x	1	2	3	4	5	6
y	25	30	28	42	30	44

and the LSRL is $\hat{y} = 3.114x + 22.27$. Find the residual value for $x = 3$.

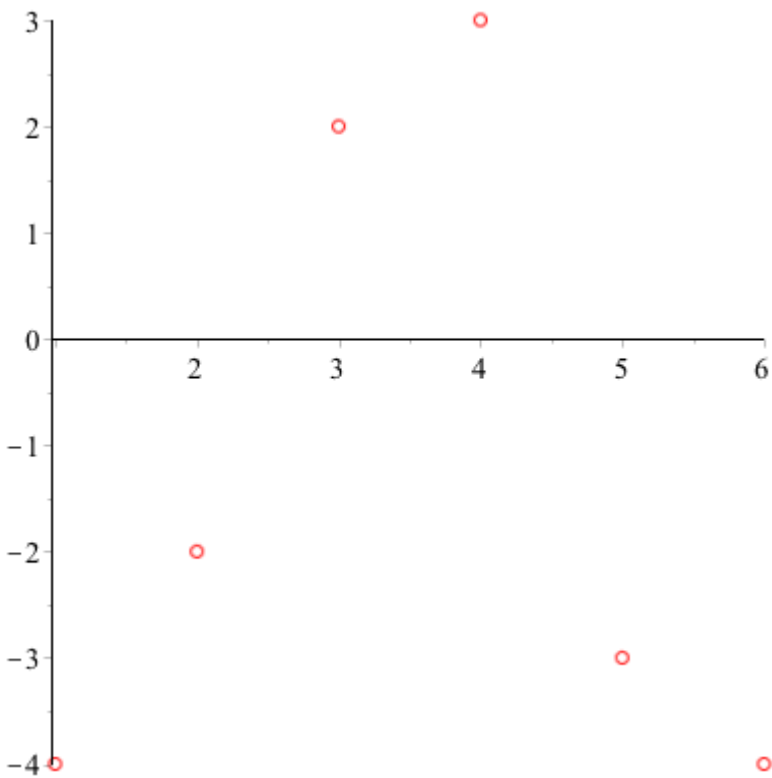
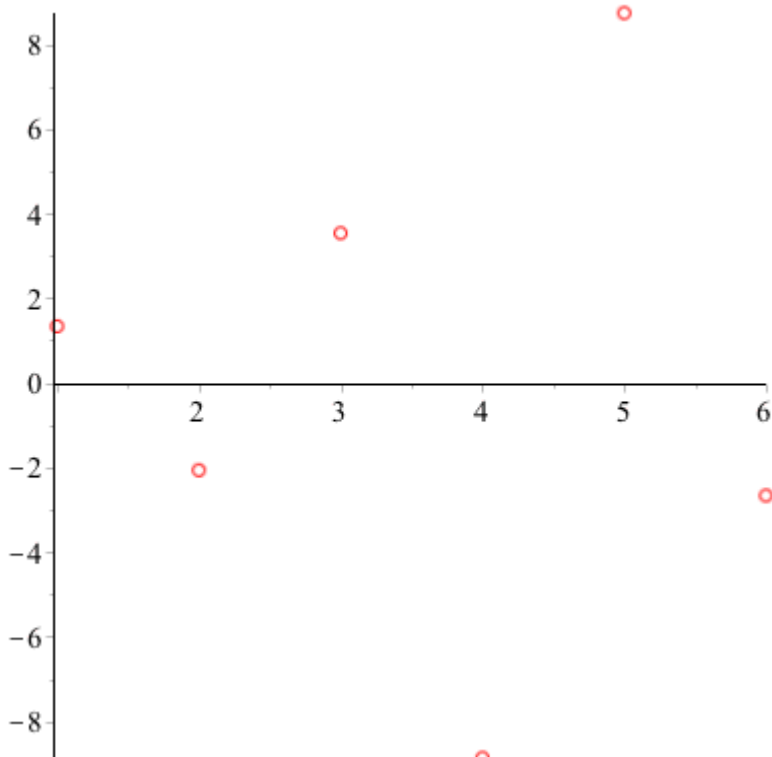
- a) ☐ 3.612
- b) ☒ -3.612
- c) ☐ 28
- d) ☐ 31.612
- e) ☐ None of the above

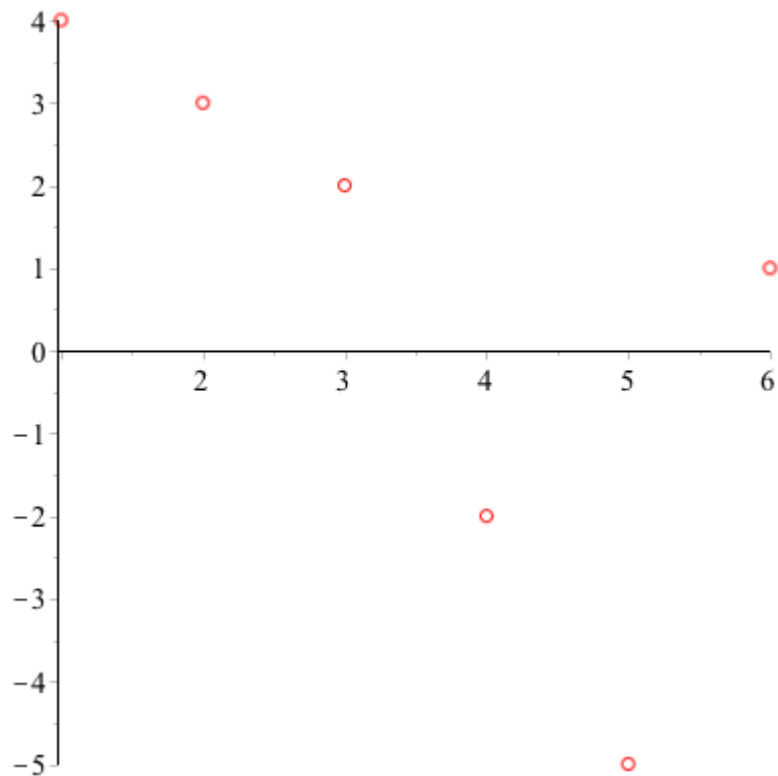
Question 4

Your answer is CORRECT.

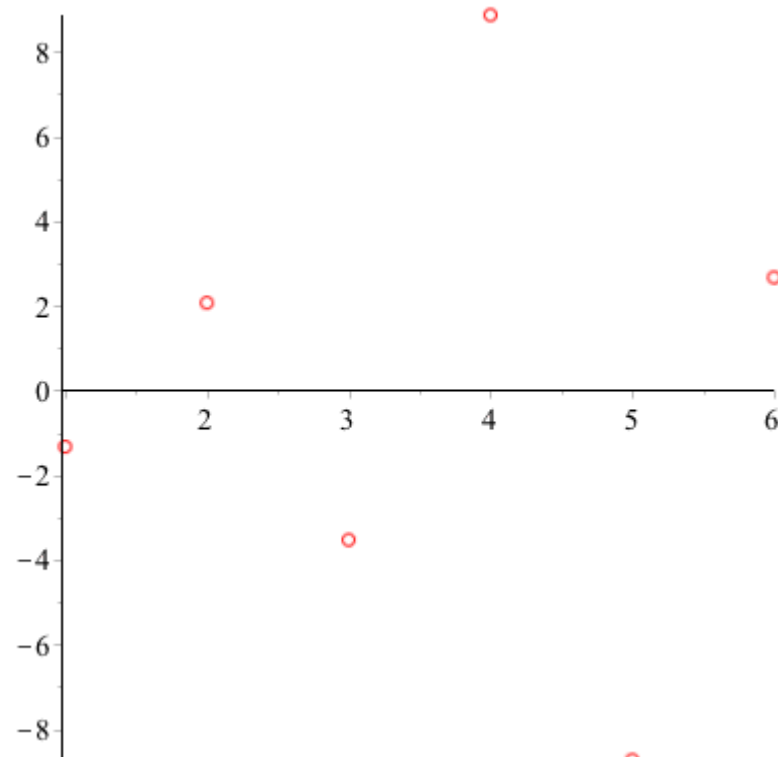
Which of the following is the residual plot for the data in the given table?

x	1	2	3	4	5	6
y	14	20	17	32	17	31

a) ☐b) ☐



c) ☐



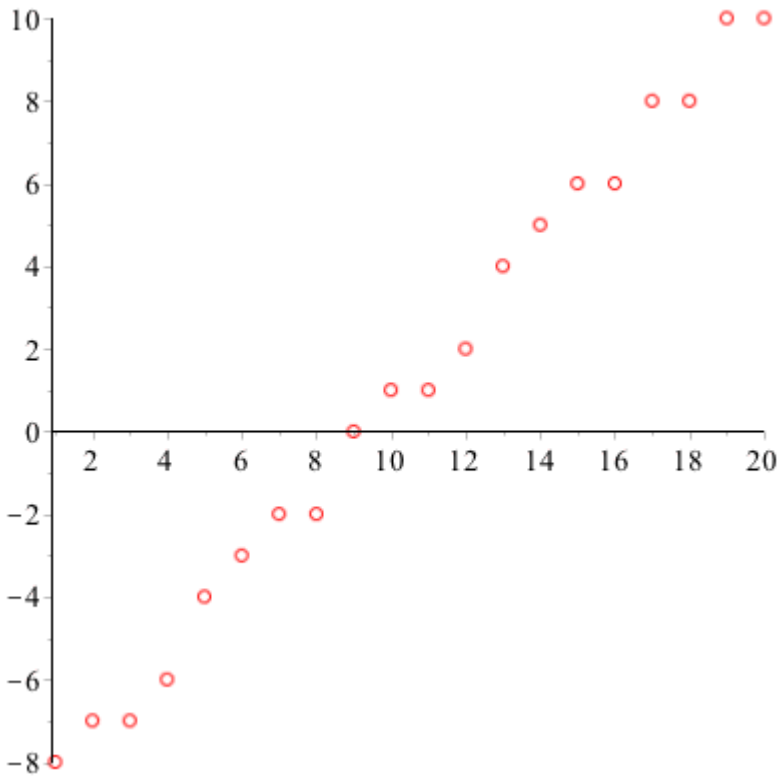
d) ☒

e) ☐ None of the above

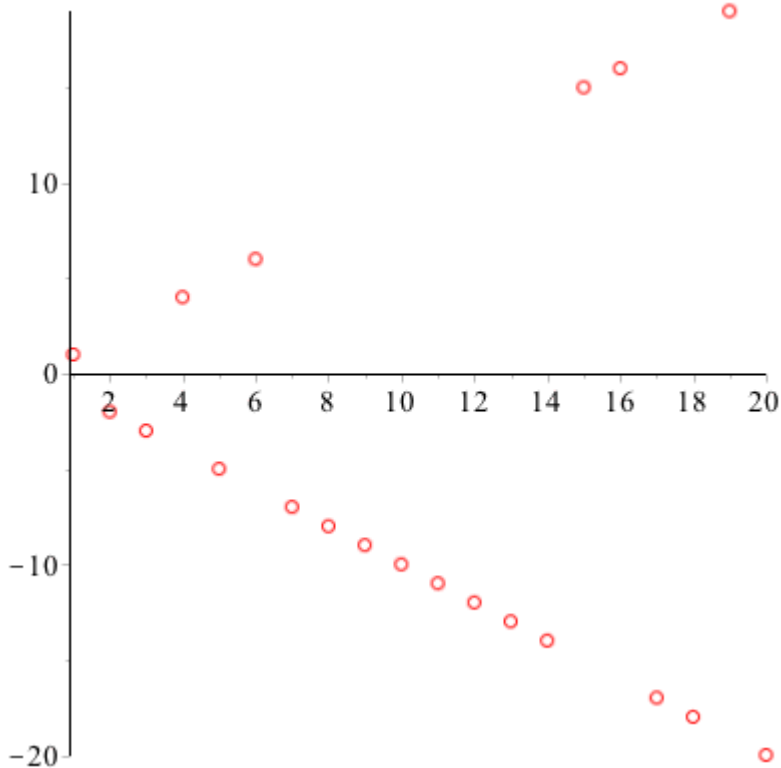
Question 5

Your answer is CORRECT.

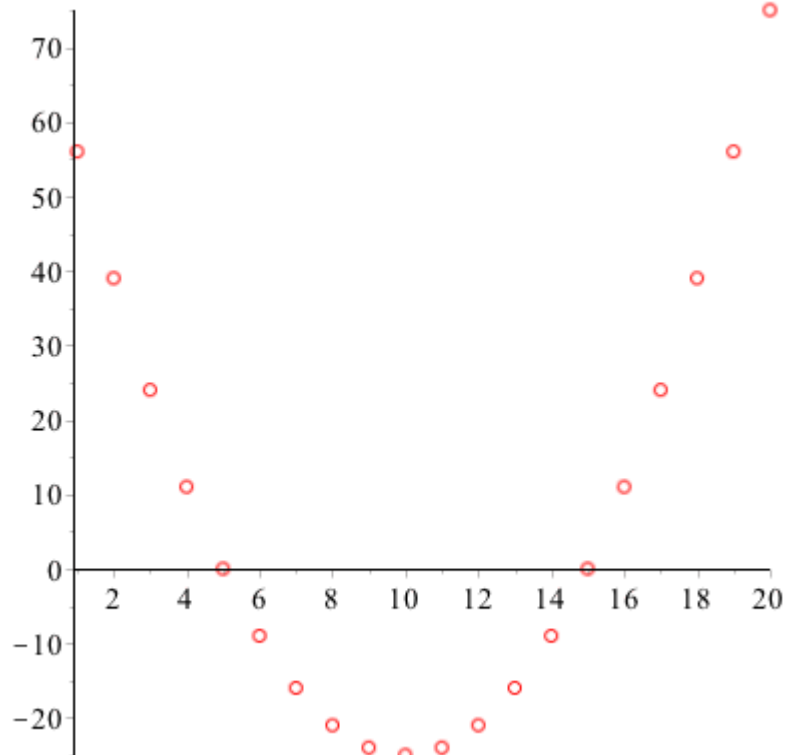
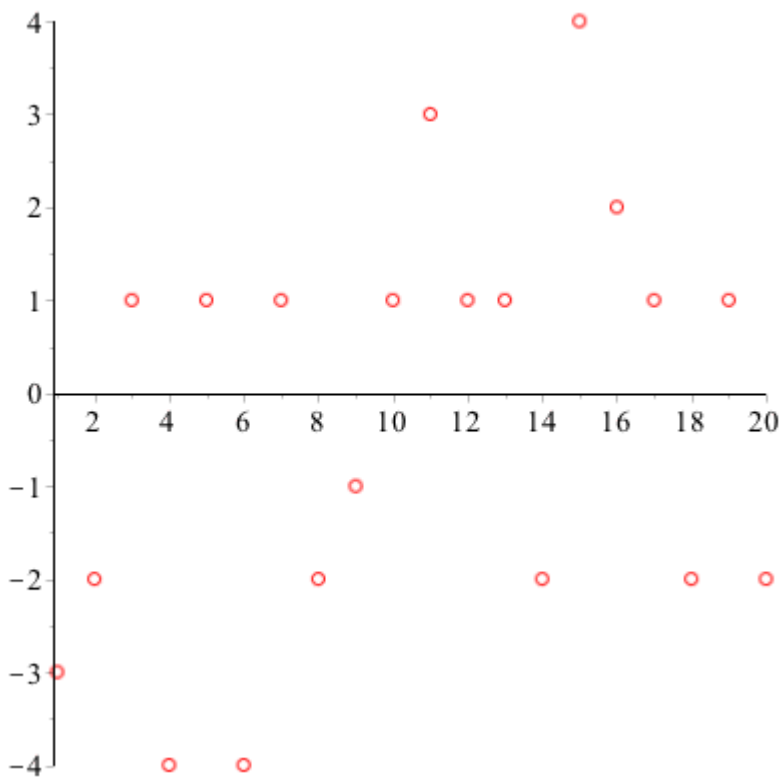
Which of the following residual plots would indicate a good LSRL model?



a) ☐



b) ☐

c) ☐d) ☒

Question 6

Your answer is CORRECT.

If the LSRL relating the independent variable x and the dependent variable y for a given problem is $\hat{y} = 2x + 3$, then an increase of 1 unit in x is associated with an increase of how many units in y ?

- a) ☒ 2
- b) ☐ 1
- c) ☐ 3
- d) ☐ 0
- e) ☐ 5

Question 7

Your answer is CORRECT.

Select the equation of the least squares line for the data: (44.20, 1.30), (42.25, 3.25), (45.50, .65), (40.30, 6.50), (39.00, 5.85), (35.75, 8.45), (37.70, 6.50).

- a) ☐ $\hat{y} = 41.407 - 0.89210x$
- b) ☒ $\hat{y} = 37.643 - 0.81100x$
- c) ☐ $\hat{y} = -37.643 - 0.81100x$
- d) ☐ $\hat{y} = 37.643 - 0.89210x$
- e) ☐ $\hat{y} = 0.81100x - 37.643$
- f) ☐ None of the above

Question 8

Your answer is CORRECT.

The decline of salmon fisheries along the Columbia River in Oregon has caused great concern among commercial and recreational fishermen. The paper 'Feeding of Predaceous Fishes on Out-Migrating Juvenile Salmonids in John Day Reservoir, Columbia River' (Trans. Amer. Fisheries Soc. (1991: 405-420) gave the accompanying data on y = maximum size of salmonids consumed by a northern squaw fish (the most abundant salmonid predator) and x = squawfish length, both in mm. Here is the computer software printout of the summary:

Coefficients:				
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-90.020	16.702	-5.390	0.000
Length	0.705	0.049	14.358	0.000

Using this information, give the equation of the least squares regression line.

- a) ☒ $\hat{y} = -90.020x + 0.705$

- b) ☒ $\hat{y} = 0.705x - 90.020$
- c) ☐ $\hat{y} = 16.702x - 90.020$
- d) ☐ $\hat{y} = 0.705x + 16.702$
- e) ☐ $\hat{y} = 16.702x + 0.049$
- f) ☐ None of the above

Question 9

Your answer is CORRECT.

The decline of salmon fisheries along the Columbia River in Oregon has caused great concern among commercial and recreational fishermen. The paper 'Feeding of Predaceous Fishes on Out-Migrating Juvenile Salmonids in John Day Reservoir, Columbia River' (Trans. Amer. Fisheries Soc. (1991: 405-420) gave the accompanying data on 10 values for the data sets where y = maximum size of salmonids consumed by a northern squaw fish (the most abundant salmonid predator) and x = squawfish length, both in mm. Here is the computer software printout of the summary:

Coefficients:				
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-91.030	16.703	-5.450	0.000
Length	0.706	0.042	16.759	0.000

Using this information, compute a 95% confidence interval for the slope.

- a) ☐ [0.636, 0.775]
- b) ☐ [-124.969, -57.091]
- c) ☒ [0.620, 0.791]
- d) ☐ [0.365, -56.836]
- e) ☐ [-123.767, -58.293]
- f) ☐ None of the above

Question 10

Your answer is CORRECT.

Data for gas mileage (in mpg) for different vehicles was entered into a software package and part of the ANOVA table is shown below:

Source	DF	SS	MS
Vehicle	5	420	210.00

Error	66	303	4.59
Total	71	723	

If a LSRL was fit to this data, what would the value of the coefficient of determination be?

- a) ☐ 41.91%
- b) ☐ 45.74%
- c) ☐ 38.09%
- d) ☒ 58.09%
- e) ☐ 76.22%
- f) ☐ None of the above

Question 11

Your answer is CORRECT.

A real estate agent would like to predict the selling price of a single-family house by predicting the price (in \$1000) based on the square footage (in 100 square feet). Calculate a 95% confidence interval for the slope of the true regression line.

Dependent variable : Y

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	4034.4144	4034.4144	23.885	0.0003
Error	13	2195.8215	168.9093		
C total	14	6230.2360			
Root MSE	12.9965	R-square	0.6476		
Dep Mean	88.8400	Adj R-square	0.6204		
C.V.	14.6291				

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter = 0	Prob > T
Intercept	1	18.3538	14.8077	1.239	0.2371
X	1	3.8785	0.7936	4.887	0.0003

- a) ☐ [0.864, 6.893]
- b) ☒ [2.164, 5.593]
- c) ☐ [-3.066, 10.823]
- d) ☐ [1.164, 6.593]
- e) ☐ [1.909, 5.848]

f) ☐ None of the above

Question 12

Your answer is CORRECT.

A real estate agent would like to predict the selling price of a single-family house by predicting the price (in thousands of dollars) based on the square footage (in 100 square feet). Predict the price of a 3000 square foot house (in thousands of dollars).

Dependent variable : Y
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	4034.4144	4034.4144	23.885	0.0003
Error	13	2195.8215	168.9093		
C total	14	6230.2360			
Root MSE	12.9965	R-square	0.6476		
Dep Mean	88.8400	Adj R-square	0.6204		
C.V.	14.6291				

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter = 0	Prob > T
Intercept	1	18.3538	14.8077	1.239	0.2371
X	1	3.8785	0.7936	4.887	0.0003

- a) ☐ 238.709
- b) ☐ 1347.088
- c) ☐ 236.709
- d) ☐ 139.709
- e) ☒ 134.709
- f) ☐ None of the above