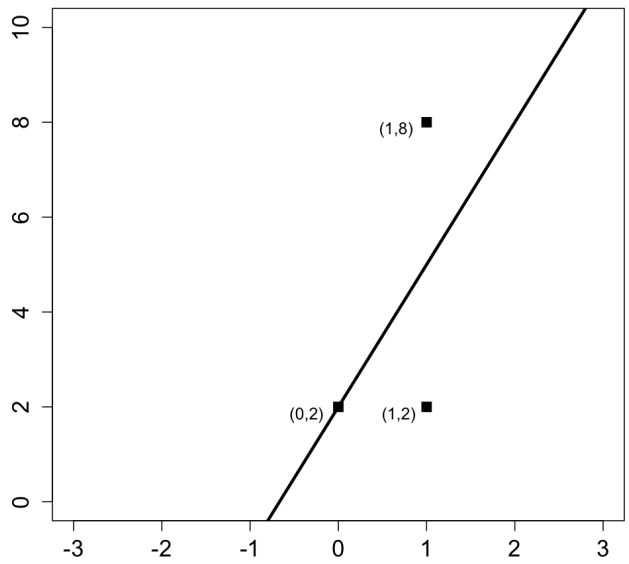
QUICK QUESTION 2 (4/4 points)

The following figure shows three data points and the best fit line

y = 3x + 2.

The x-coordinate, or "x", is our independent variable and the y-coordinate, or "y", is our dependent variable.



Please answer the following questions using this figure.

What is the baseline prediction?

4

4

Answer: 4

EXPLANATION

The baseline prediction is the average value of the dependent variable. Since our dependent variable takes values 2, 2, and 8 in our data set, the average is (2+2+8)/3 = 4.

What is the Sum of Squared Errors (SSE) ?

18

18

Answer: 18

EXPLANATION

The SSE is computed by summing the squared errors between the actual values and our predictions. For each value of the independent variable (x), our best fit line makes the following predictions:

If x = 0, y = 3(0) + 2 = 2,

If x = 1, y = 3(1) + 2 = 5.

Thus we make an error of 0 for the data point (0,2), an error of 3 for the data point (1,2), and an error of 3 for the data point (1,8). So we have

SSE = $0^2 + 3^2 + 3^2 = 18$.

What is the Total Sum of Squares (SST) ?

24

24

Answer: 24

EXPLANATION

The SST is computed by summing the squared errors between the actual values and the baseline prediction. From the first question, we computed the baseline prediction to be 4. Thus the SST is:

SST = $(2 - 4)^2 + (2 - 4)^2 + (8 - 4)^2 = 24$.

What is the R^2 of the model?

0.25

0.25

Answer: 0.25

EXPLANATION

The R^2 formula is:

$R^2 = 1 - SSE/SST$

Thus using our answers to the previous questions, we have that

$R^2 = 1 - 18/24 = 0.25$.

Check | Save | Hide Answer *You have used 1 of 5 submissions*

Your answers have been saved but not graded. Click 'Check' to grade them.

Contact (https://www.edx.org/contact)

EdX is a non-profit created by founding partners Harvard and MIT whose mission is to bring the best of higher education to students of all ages anywhere in the world, wherever there is Internet access. EdX's free online MOOCs are interactive and subjects include computer science, public health, and artificial intelligence.

(http://www.meetup.com/edX-Global-Community/)

(http://www.facebook.com/EdxOnline)

(https://twitter.com/edXOnline)

(https://plus.google.com/108235383044095082

(http://youtube.com/user/edxonline)

© 2014 edX, some rights reserved.

Terms of Service and Honor Code -
Privacy Policy (https://www.edx.org/edx-privacy-policy)