4.3 Review Questions

4.3.R1

1/1 point (graded)

Suppose we collect data for a group of students in a statistics class with variables $X_1 =$ hours studied, $X_2 =$ undergrad GPA, and $Y =$ receive an A. We fit a logistic regression and produce estimated coefficients $\hat{\beta}_o = -6, \hat{\beta}_1 = 0.05, \hat{\beta}_2 = 1.$

Estimate the probability that a student who studies for 40h and has an undergrad GPA of 3.5 gets an A in the class (within 0.01 accuracy):

0.3775 ✔ **Answer:** .3775

0.3775

Explanation

We know that $P\left((40, 3.5)\right) = \frac{e^{-6+.05*40+1*3.5}}{1+e^{-6+.05*40+1*3.5}} = .37554$

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Answers are displayed within the problem

4.3.R2

1/1 point (graded)

How many hours would that student need to study to have a 50% chance of getting an A in the class?:

50 ✔ **Answer:** 50

50

Explanation

We have $P\left((h, 3.5)\right) = \frac{e^{-6+.05*h+1*3.5}}{1+e^{-6+.05*h+1*3.5}} = .5$. Rearranging gives $-6 + .05 * h + 1 * 3.5 = 0$ or $h = 50$

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Answers are displayed within the problem