## Week 2 Lab

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**14/14** points earned (100%)

Quiz passed!



1/1 points

1.

Suppose the posterior distribution of  $\mu$  follows a Normal distribution with mean 10 and variance 5. Which of the following are the bounds of a 95% credible interval for  $\mu$ ? Answer this question using the app.

- (-1.96, 1.96)
- (0.419, 0.872)
- (0.959, 3.417)
- (5.618, 14.382)

Correct

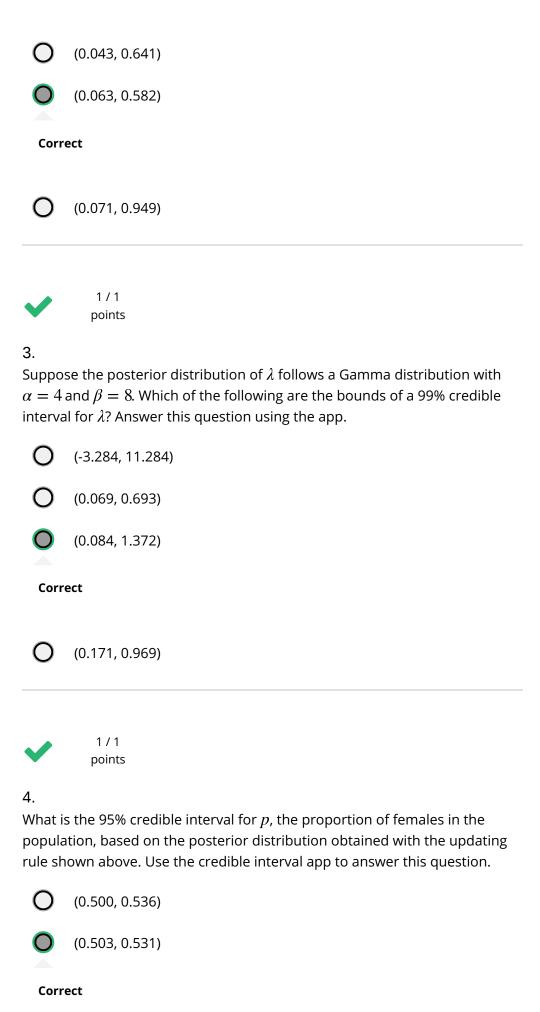


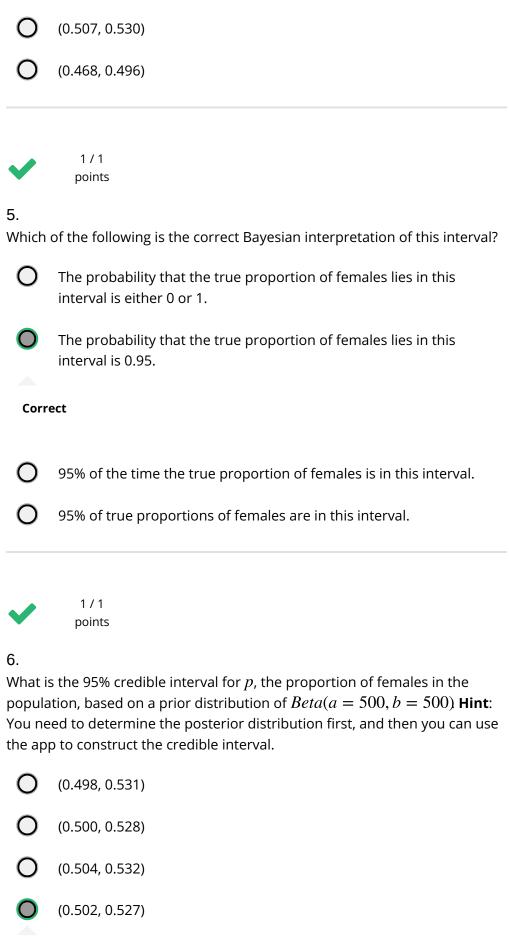
1/1 points

2.

Suppose the posterior distribution of p follows a Beta distribution with  $\alpha=2$  and  $\beta=5$ . Which of the following are the bounds of a 90% credible interval for p? Answer this question using the app.

**(**-1.678, 5.678)





Correct

<b>~</b>	1 / 1 points
7. Which distribu	is of the following is the center of the $Beta(a=5,b=200)$ ution?
0	approximately 0.03
Corre	ect
0	approximately 0.15
0	approximately 0.50
0	approximately 0.97
<b>~</b>	1/1 points
8.	
popula need to	Is the 95% credible interval for $p$ , the proportion of females in the tion, based on a prior distribution of $Beta(a=5,b=200)$ Hint: You determine the posterior distribution first, and then you can use the construct the credible interval.

(0.503, 0.531)

9.

What is the 90% credible interval for p, the proportion of Americans who exercise, based on a uniform prior distribution?

- (0.762, 0.785)
- (0.764, 0.783)

Correct

- (0.718, 0.737)
- (0.758, 0.789)



1/1 points

10.

Using the multi-observation updating rule, what should the posterior distribution be when the hyperparameters of a Gamma prior are a=4 and b=1 and we observe  $x=\{2,3,4,5,4\}$ 



Gamma(a = 22, b = 6)

Correct

- $\bigcirc$  Gamma(a = 18, b = 5)
- Gamma(a = 18, b = 6)
- Gamma(a = 19, b = 8)



1/1 points

The government recommends that Americans consume approximately 5 servings of fruits per day. Which of the following represents a weak prior that Americans on average follow this recommendation.

Gamma(a = 1, b = 5)

Gamma(a = 5, b = 1)

Correct

Gamma(a = 100, b = 500)

Gamma(a = 500, b = 100)



1/1 points

12.

Using the correct prior distribution from the previous question, calculate the parameters of the posterior distribution.

Gamma(a = 8114, b = 5000)

Gamma(a = 8118, b = 5001)

Gamma(a = 8119, b = 5001)

Correct

Gamma(a = 8115, b = 5005)



1/1 points

13.

Using the correct posterior distribution from the previous question, calculate the 90% credible interval for  $\lambda$ , the expected number of servings of fruit Americans consume per day.

0

(1.594, 1.653)

0	(1.588, 1.659)
0	(1.592, 1.651)
0	(1.575, 1.668)

Correct



1 / 1 points

## 14.

Based on this result, do Americans appear to follow the government guidelines which recommend consuming 5 servings of fruits per day?

O Yes



Correct





