

Name \_\_\_\_\_

Student Number \_\_\_\_\_

## STA 312 f2023 Quiz 4

1. (3 points) The expected value of a Weibull random variable  $T$  with parameters  $\alpha$  and  $\lambda$  is  $E(T) = \frac{1}{\lambda} \Gamma\left(\frac{1}{\alpha} + 1\right)$ . You don't have to show this. To obtain the standard error of *estimated*  $E(T)$  for your R work, you needed to calculate  $\dot{g}(\alpha, \lambda)$ . Show the calculation of  $\dot{g}(\alpha, \lambda)$  in the space below. **Circle your final answer.**

2. (2 points) For Question 1 of Assignment 4, you analyzed numerical data from a Weibull distribution, and you produced a 95% confidence interval for  $E(T)$ . Write the confidence interval in the space below: Just two numbers. On your printout, circle the numbers and write "Question 2" beside them. **The code that produced the confidence interval for  $E(T)$  must be shown.**

3. (5 points) Let  $T$  be a continuous random variable with  $P(T > 0) = 1$ , density  $f(t)$  and cumulative distribution function  $F(t) = P(T \leq t)$ . Prove  $h(t) = \frac{f(t)}{S(t)}$ . You may use anything on the formula sheet except the fact you are proving.

Please attach the printout with your answer to Question 2 of this quiz (Question 1d of the assignment). **The code that produced the confidence interval for  $E(T)$  must be shown.** Make sure your name and student number are written on the printout.