

## Homework 5

Code:

```
1  # HW 5 Continuous Distributions
2  # Inthat Sappipat 65011304
3
4  options(scipen = 999) # set the display format for large_number
5
6  cont_dis <- function() { # create function named cont_dis to calculate the six continuous
7    # distributions in six questions
8
9    set.seed(304) # set seed to ensure that the random numbers generated
10     # will be the same in each time
11
12    #Q6
13    shape <- 1 # create a variable named shape to store the value of shape
14
15    scale <- 300 # create a variable named scale to store the value of scale
16
17    time <- 240 # create a variable named time to store the value of time
18
19    prob6 <- 1 - pweibull(time, shape, scale) # calculate the distribution in question 6
20
21    #Q7
22    alpha <- 2 # create a variable named alpha to store the value of alpha
23
24    beta <- 3 # create a variable named beta to store the value of beta
25
26    time <- 2 / 2.5 # create a variable named time to store the value of time
27
28    prob7 <- 1 - pbeta(time, alpha, beta) # calculate the distribution in question 7
29
30    #Q8
31    mean <- 6 # create a variable named mean to store the value of mean
32
33    rate <- 1 / mean # create a variable named rate to store the value of rate
34
35    time <- 3 # create a variable named time to store the value of time
36
37    prob8 <- pexp(time, rate = rate) # calculate the distribution in question 8
38
```

```
39    #Q9
40    mean <- 7000 # create a variable named mean to store the value of mean
41
42    sd <- 600 # create a variable named sd to store the value of sd
43
44    x <- 5800 # create a variable named x to store the value of the interested probability
45
46    z <- (x - mean) / sd # create a variable named z to store the value of z-score
47
48    prob9 <- pnorm(z) # calculate the distribution in question 9
49
50    #Q10
51    theta <- 0.5 # create a variable named theta to store the value of theta
52
53    omega <- 1 # create a variable named omega to store the value of omega
54
55    time <- 10 # create a variable named time to store the value of time
56
57    prob10 <- 1 - plnorm(time, meanlog = theta, sdlog = omega) # calculate the distribution
58     # in question 10
59
60    #result
61    cat("Question 6 result: ", prob6, "\n") # show the output of the distribution
62     # in question 6
63
64    cat("Question 7 result: ", prob7, "\n") # show the output of the distribution
65     # in question 7
66
67    cat("Question 8 result: ", prob8, "\n") # show the output of the distribution
68     # in question 8
69
70    cat("Question 9 result: ", prob9, "\n") # show the output of the distribution
71     # in question 9
72
73    cat("Question 10 result: ", prob10, "\n") # show the output of the distribution
74     # in question 10
75
76  }
77
78  cont_dis() # run the function
```

Result:

```
> cont_dis() # run the function
Question 6 result: 0.449329
Question 7 result: 0.0272
Question 8 result: 0.3934693
Question 9 result: 0.02275013
Question 10 result: 0.0357267
```