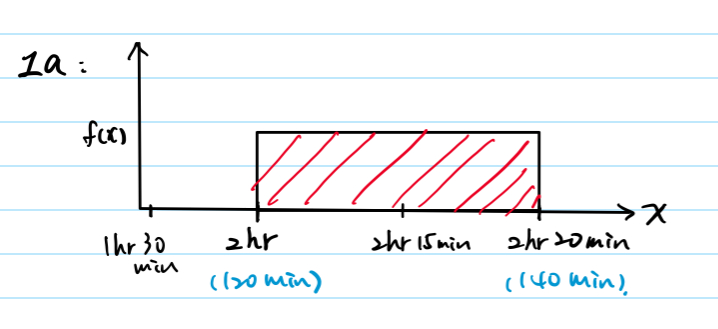


Question 1 (3 points)

RUBRIC: (-Write down all steps of the answer. Write down your final answers and explain as needed. Lack of each item results in 0.5-to-1-point deduction)

Delta Airlines quotes a flight time of 2 hours, 5 minutes for its flights from Cincinnati to Tampa. Suppose we believe that actual flight times are uniformly distributed between 2 hours and 2 hours, 20 minutes.

a) Show the graph of the probability density function for flight time.



b) What is the probability that the flight will be no more than 5 minutes late?

P(X <= x) = x-a/ b-a

P(X < 2hr 5mins + 5 mins) = P(X < 130) = 130 - 120 / 140 - 120 = 10 / 20 = .5

c) What is the probability that the flight will be more than 10 minutes late?

P(X > x) = 1 - (x-a/ b-a)

P(X > 2hr 5mins + 10 mins) = P(X > 135) = 1-(135 - 120) / (140 -120)

= 1 - 15/20 = .25

d) What is the expected flight time?

expected fight time = the mean of flight time

mu = (120+140) / 2 = 130

Question 2 (4 points)

RUBRIC: (-Write down all steps and formula. -Write down (or copy) the normal distribution formula in Excel or Python. Write down your final answers. For each item Sketch or draw the normal distribution and highlight the desired area. Lack of providing the graph for each question results in 0.5-1-points grade deduction).

Automobile repair costs continue to rise with an average 2015 cost of $367 per repair (U.S. News & World Report website). Assume that the cost for an automobile repair is normally distributed with a standard deviation of $88. Answer the following questions about the cost of automobile repairs.

We know that the **mu = 367, sd = 88**, and the automobile repair costs follow a normal distribution.

a) What is the probability that the cost will be more than $450?

P(x > 450) = 1- P(x<=450) = 1 - NORMDIST(450, 367, 88, 1) = 0.1727939558

b) What is the probability that the cost will be less than $250?

P(x < 250) = NORMDIST(250, 367, 88, 1) = 0.09183403998

c) What is the probability that the cost will be between $250 and $450?

P (250 < x < 450) = P(x < 450) - P(x < 250)

= NORMDIST(450, 367, 88, 1) - NORMDIST(250, 367, 88, 1)

= 0.7353720042

d) If the cost for your car repair is in the lower 5% of automobile repair charges, what is

your cost?

P(x < cost) = 0.05, cost = ?

cost =NORMINV(0.05, 367, 88) = 222.252881

e) ㄍP(x > cost) = 1 - P(x <= cost) = 0.03

cost = 1 -