1.(1 pt) A manager of an apartment store reports that the time of a customer on the second floor must wait for the elevator has a uniform distribution ranging from 2 to 4 minutes. If it takes the elevator 15 seconds to go from floor to floor, find the probability that a hurried customer can reach the first floor in less than 3 minutes after pushing the elevator button on the second floor.

answer : _____

2.(1 pt) Suppose the time to process a loan application follows a uniform distribution over the range 7 to 17 days. What is the probability that a randomly selected loan application takes longer than 15 days to process?

answer: _____

3.(1 pt) Suppose x is a random variable best described by a uniform probability that ranges from 2 to 4. Compute the following:

(a) the probability density function $f(x) =$ _____

(b) the mean $\mu =$ _____

(c) the standard deviation $\sigma =$ _____

(d) $P(\mu - \sigma \leq x \leq \mu + \sigma) =$ _____

(e) $P(x \geq 2.03) =$ _____

4.(1 pt) Suppose a random variable x is best described by a uniform probability distribution with range 1 to 4. Find the value of a that makes the following probability statements true.

(a) $P(x \leq a) = 0.83$

$a =$ _____

(b) $P(x < a) = 0.87$

$a =$ _____

(c) $P(x \geq a) = 0.55$

$a =$ _____

(d) $P(x > a) = 0.7$

$a =$ _____

(e) $P(1.27 \leq x \leq a) = 0.46$

$a =$ _____

5.(1 pt) The weather in Rochester in December is fairly constant. Records indicate that the low temperature for each day of the month tend to have a uniform distribution over the interval 15° to 35°F. A business man arrives on a randomly selected day in December.

(a) What is the probability that the temperature will be above 22°?

answer: _____

(b) What is the probability that the temperature will be between 18° and 33°?

answer: _____

(c) What is the expected temperature?

answer: _____

6.(1 pt) If a is uniformly distributed over $[-16, 21]$, what is the probability that the roors of the equation

$$x^2 + ax + a + 24 = 0$$

are both real? _____