Module 7 Problem Set

Due Feb 28 by 9:59pm **Points** 15 **Submitting** an external tool **Available** Feb 21 at 10pm - Mar 20 at 9:59pm 27 days

Review Assessment Attempts

Uber, Jacques

Module 7 Problem Set

Started: 2/25/21, 2:48 pm
Last Changed: 2/26/21, 6:37 pm
Total time questions were on-screen: 308.6 minutes

Due Date: Sun 2/28/21, 9:59 pm

Score in Gradebook: 13.7/15

Grade is calculated on the best version of each question

Scored attempt. Score: **13.7/15**.

Question 1. Version 3*/3. Score: **0.67/1**

Speedometer readings for a vehicle (in motion) at 3-second intervals are given in the table.

***t* (sec)**	0	3	6	9	12	15	18
***v* (ft/s)**	0	7	23	42	53	51	38

Estimate the distance traveled by the vehicle during this 18-second period using the Riemann sums L_6, R_6 and M_3.

L [redacted] 4 feet

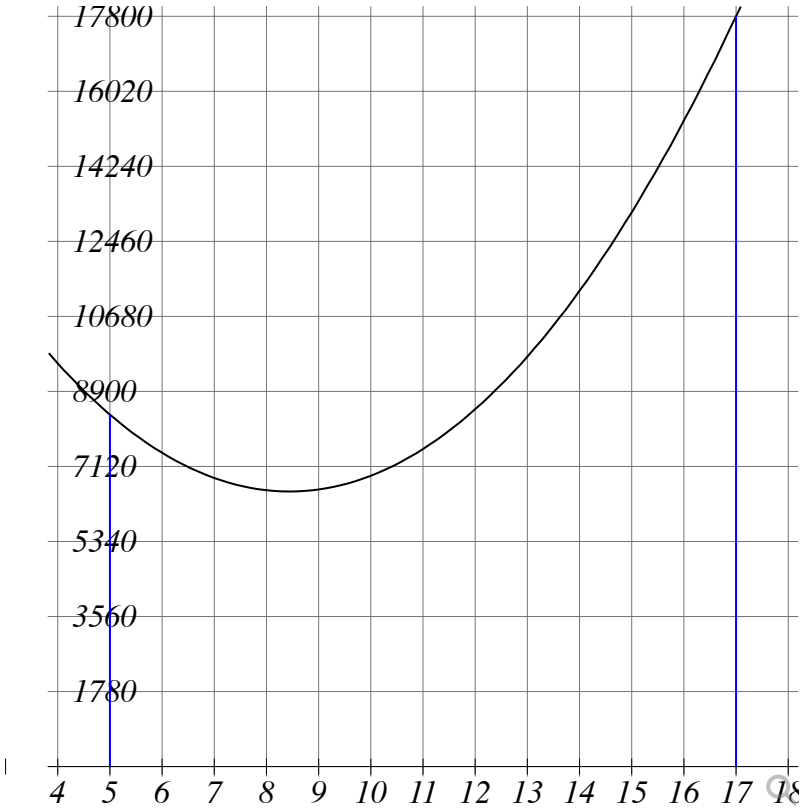
L_6 = 528 feet

R_6 = 642 feet

M_3 = 300 feet

Score: 0.333/0.333 0.333/0.333 0/0.333
Time spent on this version: 1.5 minutes.
Message instructor

Question 2. Version 1*/1. Score: **1/1**



The marginal cost of producing x thousand computer chips is given by

$C'(x) = 154x^2 - 2600x + 17500$ dollars per thousand chips, whose graph is shown above

Interpret $\int_5^{17} (154x^2 - 2600x + 17500)\,dt$ = 112584.

- ○ The cost of increasing production from 5 to 17 chips is $112584.
- ○ The cost of decreasing production from 17000 to 5000 chips is $112584.
- ○ The cost of decreasing production from 17 to 5 chips is $112584.
- ○ The cost of production of 12000 thousand chips is $112584.
- ◉ The cost of increasing production from 5000 to 17000 chips is $112584.

Score: 1/1
Time spent on this version: 1.5 minutes.
Message instructor

Question 3. Version 1*/1. Score: **1/1**

Use part I of the Fundamental Theorem of Calculus to find the derivative of

$$f(x) = \int_{-4}^{x} \sqrt{t^3 + 4^3}\,dt$$

$f'(x)$ = $\sqrt{x^3 + 4^3}$

[NOTE: Enter a function as your answer. Make sure that your syntax is correct, i.e. remember to put all the necessary (,), etc.]

Score: 1/1
Time spent on this version: 17.9 minutes.
Message instructor

Question 4. Version 3*/3. Score: **1/1**

The traffic flow rate (cars per hour) across an intersection is modeled $r(t) = 500 + 600t - 180t^2$, where t represents the number of hours since 6 am. How many cars pass through the intersection between 6 am and 7 am?

740 cars

Score: 1/1
Time spent on this version: 0.3 minutes.
Message instructor

Question 5. Version 2*/2. Score: **1/1**

You are memorizing words for a vocabulary test. You studied a few days ago, and you know 16 words already. It is the night before the test, and you sit down to finish studying the words. Suppose that the rate of memorizing is given by $M'(t) = -0.001t^2 + 0.1t$, where $M'(t)$ is the memory rate, in words per minute. What is the total number of words you have memorized after 7 minutes of studying?

18 words

Round your answer to the nearest whole word

Score: 1/1
Time spent on this version: 0.3 minutes.
Message instructor

Question 6. Version 1*/1. Score: **1/1**

The rate of reaction for a certain drug in the appropriate units is given by

`R'(t)=8/(t + 1) + 3/sqrt(t + 1)`

where `t` is time (in hours) after the drug is administered. Find the total reaction to the drug over the following time periods. Round your answers to three decimal places as needed.

From `t = 1` hour to `t = 8` hours, the total reaction of the drug is 21.547 units.

From `t = 8` hours to `t = 22` hours, the total reaction of the drug is 18.281 units.

Score: 0.5/0.5 0.5/0.5
Time spent on this version: 2.6 minutes.
Message instructor

Question 7. Version 2*/2. Score: **1/1**

Consider the definite integral `int_0^1x^3/(x^4+8)^4 \ dx`:

This can be transformed into a basic integral by letting

`u=` x^4+8 and

`du=` $4x^3$ `dx`

Performing the substitution yields the integral

`int_a^b` $\frac{1}{4u^4}$ `du`

where a = 8 and b = 9

Score: 0.2/0.2 0.2/0.2 0.2/0.2 0.2/0.2 0.2/0.2
Time spent on this version: 0.9 minutes.
Message instructor

Question 8. Version 1*/1. Score: **1/1**

Compute the given integral.

`\int x^9(x^10+5)^3dx = ` $\frac{\left(x^{40}+20x^{30}+150x^{20}+500x^{10}\right)}{40}$ `+ C`

Score: 1/1
Time spent on this version: 2.5 minutes.
Message instructor

Question 9. Version 2*/2. Score: **1/1**

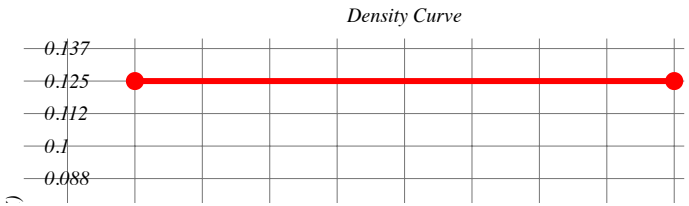
Compute the given integral.

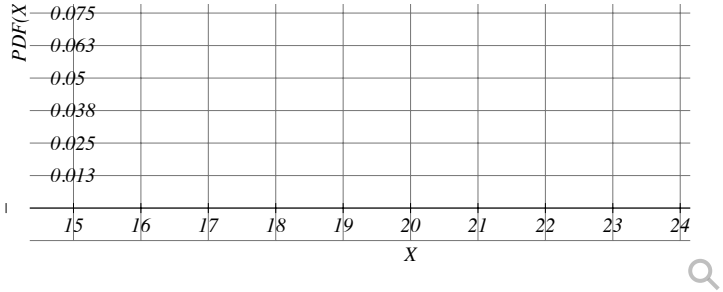
`\int xe^(2x^2) dx = ` $\frac{e^{2x^2}}{4}$ + `C`

Score: 1/1
Time spent on this version: 0.9 minutes.
Message instructor

Question 10. Version 2*/2. Score: **1/1**

Consider the density curve plotted below:





Find `P(X<=21)`: 0.625

Find `P(X>23)`: 0.125

Calculate the following. Q1: 18

median: 20

Q3: 22

IQR: 4

Score: 0.167/0.167 0.167/0.167 0.167/0.167 0.167/0.167 0.167/0.167 0.167/0.167
Time spent on this version: 3.9 minutes.
Message instructor

Question 11. Version 2*/2. Score: **1/1**

The lifetime of a printer costing $140 is exponentially distributed with mean 3.67 years. The manufacturer agrees to pay a full refund to a buyer if the printer fails during the first half year following its purchase and a one-half refund if it fails during the second half year.

If the manufacturer sells 220 printers, how much should it expect to pay in refunds?

$ 5634.52

Score: 1/1
Time spent on this version: 1.4 minutes.
Message instructor

Question 12. Version 3*/3. Score: **1/1**

Suppose it is known that, on average, 5 customers per minute visit your website. This being the case, you know that the integral

`int_0^m 5 e^(-5 t) dt`

will calculate the probability that you will have a customer visit in the next `m` minutes.

What is the percent probability that a customer will visit your website in the next `50` seconds?

[Give your answer correct to the nearest tenth of a percent.]

98.44 `\%`

What is `int_0^(infty) 5 e^(-5 t) dt`?

100 `\%`

What does this value mean in the context of the story?

It is a certainty that a customer will eventually visit the website.

Score: 0.333/0.333 0.333/0.333 0.333/0.333
Time spent on this version: 0.6 minutes.
Message instructor

Question 13. Version 3*/3. Score: **0/1**

The physical plant at the main campus of a large state university recieves daily requests to replace florecent lightbulbs. The distribution of the number of daily requests is bell-shaped and has a mean of 64

and a standard deviation of 9. Using the empirical rule, what is the approximate percentage of lightbulb replacement requests numbering between 55 and 64?

ans = 47.5 %

Score: 0/1
Time spent on this version: 1.4 minutes.
Message instructor

Question 14. Version 2*/2. Score: **1/1**

The heights of adult men in America are normally distributed, with a mean of 69.4 inches and a standard deviation of 2.69 inches. The heights of adult women in America are also normally distributed, but with a mean of 64.1 inches and a standard deviation of 2.51 inches.

a) If a man is 6 feet 3 inches tall, what is his z-score (to two decimal places)?

z = 2.08

b) What percentage of men are SHORTER than 6 feet 3 inches? Round to nearest tenth of a percent.

98.1 %

c) If a woman is 5 feet 11 inches tall, what is her z-score (to two decimal places)?

z = 2.75

d) What percentage of women are TALLER than 5 feet 11 inches? Round to nearest tenth of a percent.

.3 %

Score: 0.25/0.25 0.25/0.25 0.25/0.25 0.25/0.25
Time spent on this version: 1.1 minutes.
Message instructor

Question 15. Version 2*/2. Score: **1/1**

Suppose that the distance of fly balls hit to the outfield (in baseball) is normally distributed with a mean of 245 feet and a standard deviation of 46 feet.
Use your graphing calculator to answer the following questions. Write your answers in *percent* form. Round your answers to the nearest tenth of a percent.
a) If one fly ball is randomly chosen from this distribution, what is the probability that this ball traveled fewer than 210 feet?

`P`(fewer than 210 feet) = 22 %

b) If one fly ball is randomly chosen from this distribution, what is the probability that this ball traveled more than 222 feet?

`P`(more than 222 feet) = 69 %

Score: 0.5/0.5 0.5/0.5
Time spent on this version: 0.5 minutes.
Message instructor

Feedback:

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