

Calculus Web Assignments

Web Assignments are intended to be completed with a partner. Both partners should individually work each of the problems, followed by a collaborative discussion about the problem.

Both partners are required to participate in the “Honor-System” Grading of the Web Assignment.

Calculus: Web Assignment #11

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. A cardiac monitor is used to measure the heart rate of a patient after surgery. It compiles the number of heartbeats after t minutes. When the data in the table are graphed, the slope of the tangent line represents the heart rate in beats per minute. The monitor estimates this value by calculating the slope of a secant line. Use the data to estimate the patient's heart rate after 42 minutes using the secant line between the points with $t = 38$ and $t = 42$.

$t(\text{mins})$	36	38	40	42	44
Heartbeats	2,570	2,640	2,840	3,000	3,070

- a. -89
b. 180
c. 90
d. 100
e. 89
f. 95
- _____ 2. Estimate the value of the following limit by graphing the function $f(x) = \frac{(2 \sin x)}{(\sin \pi x)}$. State your answer correct to two decimal places.

$$\lim_{x \rightarrow 0} \frac{2 \sin x}{\sin \pi x}$$

- a. 3.14
b. 2.01
c. 1.0
d. 0
e. 0.64

_____ 3. Find the limit.

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 - 9}}{2x - 6}$$

- a. $-\frac{1}{2}$
- b. 3
- c. -3
- d. 0
- e. does not exist

_____ 4. Find f' in terms of g' .

$$f(x) = x^2 g(x)$$

Select the correct answer.

- a. $f'(x) = 2xg(x) + x^2 g'(x)$
- b. $f'(x) = 2x + g'(x)$
- c. $f'(x) = x^2 g(x) + 2x^2 g'(x)$
- d. $f'(x) = 2xg'(x)$
- e. $f'(x) = 2xf'(x) + 2xg'(x)$

_____ 5. Evaluate the integral.

$$\int_0^{1/2} \frac{dr}{\sqrt{1-r^2}}$$

Select the correct answer.

- a. $\pi/3$
- b. $\pi/2$
- c. $1/6$
- d. $1/3$
- e. $\pi/6$

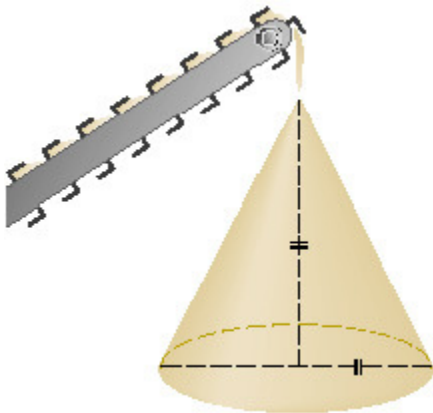
_____ 6. The height (in meters) of a projectile shot vertically upward from a point 1.5 m above ground level with an initial velocity of 25.48 m/s is $h = 1.5 + 25.48t - 4.9t^2$ after t seconds.

- a) When does the projectile reach its maximum height?
- b) What is the maximum height?

Select the correct answer.

- a. 2.8s
34.428 m
- b. 2.6s
34.624 m
- c. 2s
32.86 m
- d. 2.4s
34.428 m
- e. 2.3s
34.183 m

_____ 7. Gravel is being dumped from a conveyor belt at a rate of 35 cu ft /min and its coarseness is such that it forms a pile in the shape of a cone whose base diameter and height are always equal. How fast is the height of the pile increasing when the pile is 15 ft high? Round the result to the nearest hundredth.



Select the correct answer.

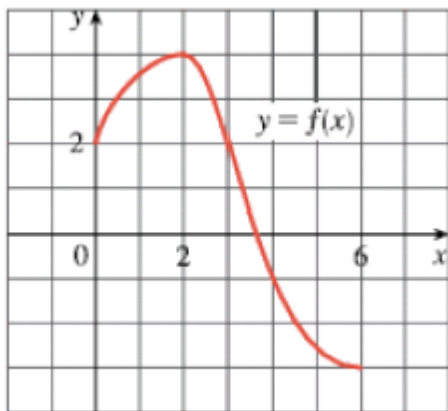
- a. 0.27 ft/min
- b. 1.24 ft/min
- c. 0.14 ft/min
- d. 0.2 ft/min
- e. 0.6 ft/min

_____ 8. Evaluate the Riemann sum for $f(r) = 2 - r^2$, $0 \leq r \leq 2$ with four subintervals, taking the sample points to be right endpoints.

Select the correct answer.

- a. 0.25
- b. 1.5
- c. 2.5
- d. 0.36
- e. 0.2

_____ 9. Use the given graph of f to find the Riemann sum with six subintervals. Take the sample points to be left endpoints.



Select the correct answer.

- a. 8
- b. 6
- c. 4
- d. 3.5
- e. 4.5

_____ 10. If $\int_0^6 f(x) dx = 10$ and $\int_0^4 f(x) dx = 7$, find $\int_4^6 f(x) dx$.

Select the correct answer.

- a. -10
- b. 17
- c. 3
- d. -3
- e. 2