

Name _____ Class _____ Date _____
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Section 1.1

1. Decide whether the following problem can be solved using precalculus, or whether calculus is required. If the problem can be solved using precalculus, solve it. If the problem seems to require calculus, use a graphical or numerical approach to estimate the solution.

Find the distance traveled in 2 seconds by an object traveling at a constant velocity of 11 feet per second.

- a. calculus, 22 ft
- b. calculus, 42 ft
- c. precalculus, 22 ft
- d. calculus, 44 ft
- e. precalculus, 44 ft

ANSWER: c
POINTS: 1
DIFFICULTY: Easy
REFERENCES: 2.1.1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: True
LEARNING OBJECTIVES: CETF.LAED.11.72 - Recognize problems requiring precalculus and find the solution
OTHER: Skill
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2. Decide whether the following problem can be solved using precalculus, or whether calculus is required. If the problem can be solved using precalculus, solve it. If the problem seems to require calculus, use a graphical or numerical approach to estimate the solution.

Find the distance traveled in 14 seconds by an object moving with a velocity of $v(t) = 11 + 6\cos t$ feet per second.

- a. calculus, 154.8204 ft
- b. precalculus, 156.1704 ft
- c. calculus, 159.9436 ft
- d. precalculus, 159.9436 ft
- e. precalculus, 154.8204 ft

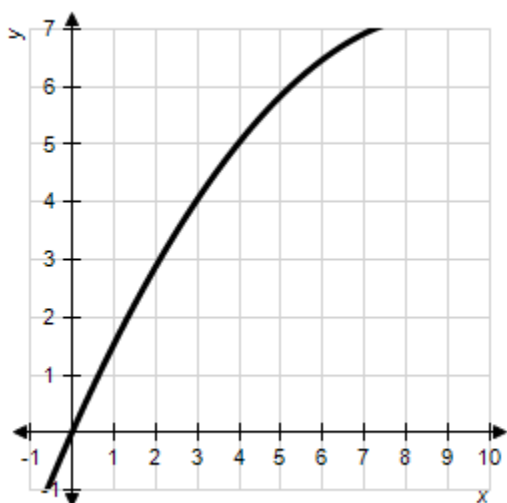
ANSWER: c
POINTS: 1
DIFFICULTY: Medium
REFERENCES: 2.1.2
QUESTION TYPE: Multiple Choice
HAS VARIABLES: True
LEARNING OBJECTIVES: CETF.LAED.11.73 - Recognize problems requiring calculus and estimate solutions
OTHER: Skill

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3. Decide whether the following problem can be solved using precalculus, or whether calculus is required. If the problem can be solved using precalculus, solve it. If the problem seems to require calculus, use a graphical or numerical approach to estimate the solution.

A cyclist is riding on a path whose elevation is modeled by the function $f(x) = 0.09(18x - x^2)$ where x and $f(x)$ are measured in miles. Find the rate of change of elevation when $x = 4.5$.



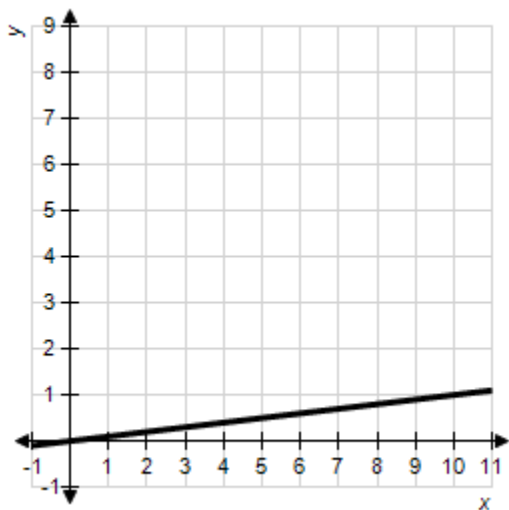
- a. precalculus, 0.09
- b. calculus, 0.21
- c. calculus, 0.81
- d. calculus, 0.09
- e. precalculus, 0.21

ANSWER: c
 POINTS: 1
 DIFFICULTY: Medium
 REFERENCES: 2.1.3
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: True
 LEARNING OBJECTIVES: CETF.LAED.11.73 - Recognize problems requiring calculus and estimate solutions
 OTHER: Skill
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4. Decide whether the following problem can be solved using precalculus, or whether calculus is required. If the problem can be solved using precalculus, solve it. If the problem seems to require calculus, use a graphical or numerical approach to estimate the solution.

A cyclist is riding on a path whose elevation is modeled by the function $f(x) = 0.1x$ where x and $f(x)$ are measured in miles. Find the rate of change of elevation when $x = 2.5$.



- a. calculus, 0.5
- b. precalculus, 0.1
- c. calculus, 0.1
- d. precalculus, 0.5
- e. precalculus, 0.35

ANSWER:

b

POINTS:

1

DIFFICULTY:

Easy

REFERENCES:

2.1.4

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

True

LEARNING OBJECTIVES: CETF.LAED.11.72 - Recognize problems requiring precalculus and find the solution

OTHER:

Skill

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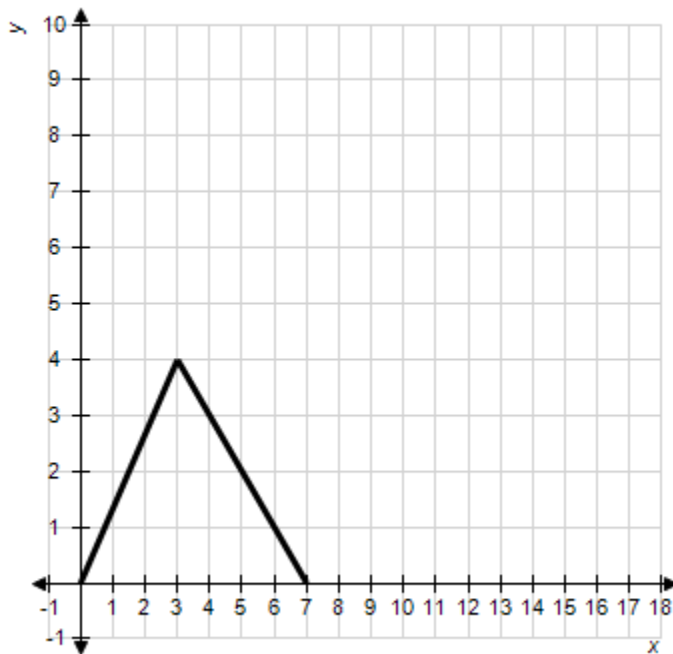
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5. Decide whether the following problem can be solved using precalculus, or whether calculus is required. If the problem can be solved using precalculus, solve it. If the problem seems to require calculus, use a graphical or numerical approach

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to estimate the solution.

Find the area of the shaded region bounded by the triangle with vertices $(0, 0)$, $(3, 4)$, $(7, 0)$.



- a. precalculus, 28
- b. calculus, 42
- c. precalculus, 14
- d. precalculus, 42
- e. calculus, 28

ANSWER:

c

POINTS:

1

DIFFICULTY:

Easy

REFERENCES:

2.1.5a

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

True

LEARNING OBJECTIVES:

CETF.LAED.11.72 - Recognize problems requiring precalculus and find the solution

OTHER:

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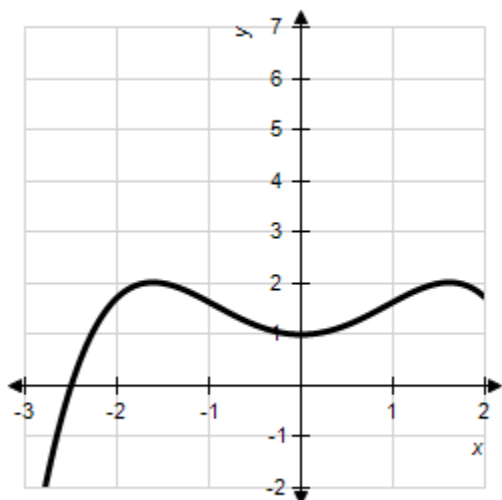
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can be solved using precalculus, solve it. If the problem seems to require calculus, use a graphical or numerical approach to estimate the solution.

Find the area of the shaded region.



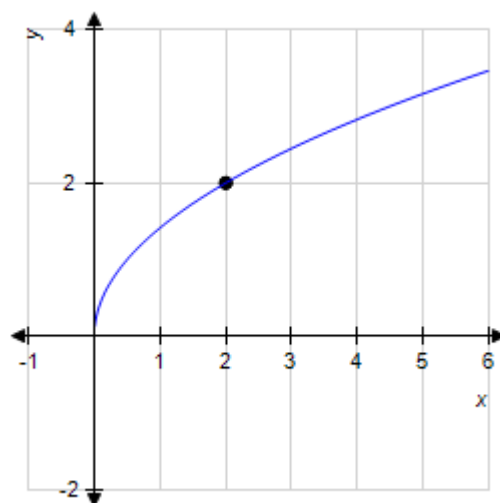
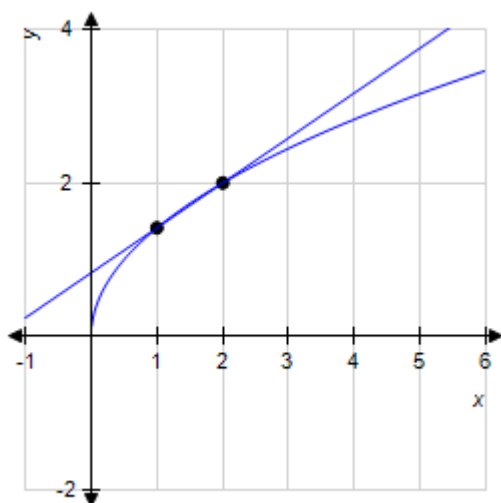
- a. calculus, 5
- b. precalculus, 5
- c. precalculus, 6
- d. calculus, 7
- e. precalculus, 7

ANSWER: a
 POINTS: 1
 DIFFICULTY: Medium
 REFERENCES: 2.1.5b
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: True
 LEARNING OBJECTIVES: CETF.LAED.11.74 - Recognize problems requiring calculus and estimate solution
 OTHER: Skill
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7. Consider the function $f(x) = \sqrt{2x}$ and the point $P(2, 2)$ on the graph of f . Graph f and the secant line passing through $P(2, 2)$ and $Q(x, f(x))$ for $x = 3$.

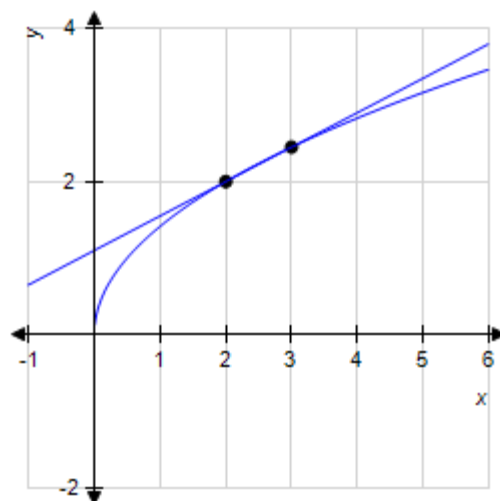
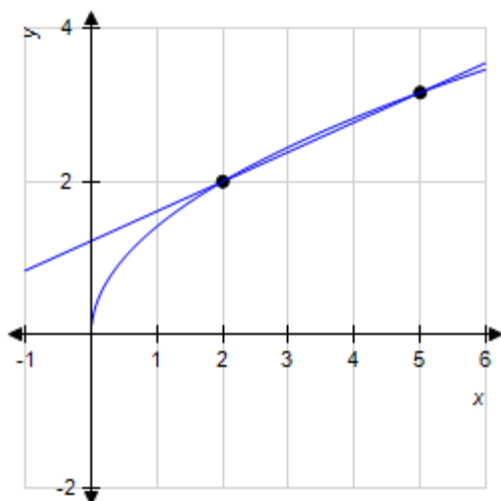
- a.
- b.

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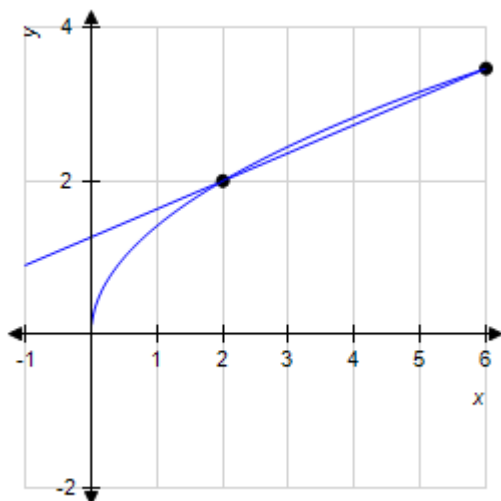
c.

d.



e.

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ANSWER: d
 POINTS: 1
 DIFFICULTY: Easy
 REFERENCES: 2.1.6a
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: True
 LEARNING OBJECTIVES: CETF.LAED.11.75 - Graph a function and the secant line passing through given points
 OTHER: Skill
 NOTES: Section 2.1
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8. Consider the function $f(x) = \sqrt{x}$ and the point $P(16, 4)$ on the graph of f . Find the slope of the secant line passing through $P(16, 4)$ and $Q(x, f(x))$ for $x = 7$. Round your answer to four decimal places.

- a. $m = 0.1505$
- b. $m = 0.0536$
- c. $m = 0.0435$
- d. $m = 0.3638$
- e. $m = 0.0909$

ANSWER: a
 POINTS: 1
 DIFFICULTY: Easy
 REFERENCES: 2.1.6b
 QUESTION TYPE: Multiple Choice

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HAS VARIABLES: True

LEARNING OBJECTIVES: CETF.LAED.11.76 - Calculate the slope of a secant line passing through given points

OTHER: Skill

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9. Consider the function $f(x) = \sqrt{x}$ and the point $P(9, 3)$ on the graph of f . Estimate the slope m of the tangent line of f at $P(9, 3)$. Round your answer to four decimal places.

- a. $m = 0.1667$
- b. $m = 0.0832$
- c. $m = 0.3800$
- d. $m = 0.0556$
- e. $m = 0.0833$

ANSWER: a

POINTS: 1

DIFFICULTY: Medium

REFERENCES: 2.1.6c

QUESTION TYPE: Multiple Choice

HAS VARIABLES: True

LEARNING OBJECTIVES: CETF.LAED.11.77 - Estimate the slope of a tangent line

OTHER: Skill

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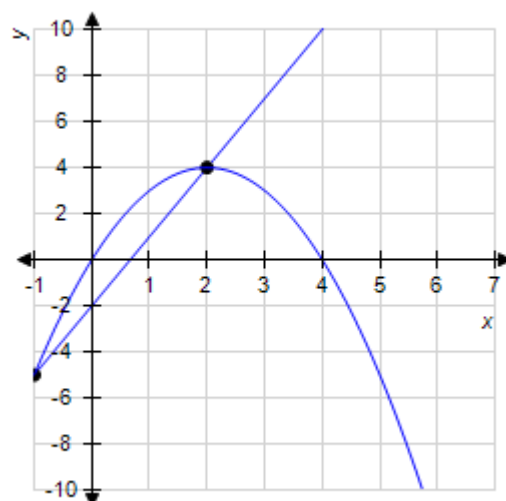
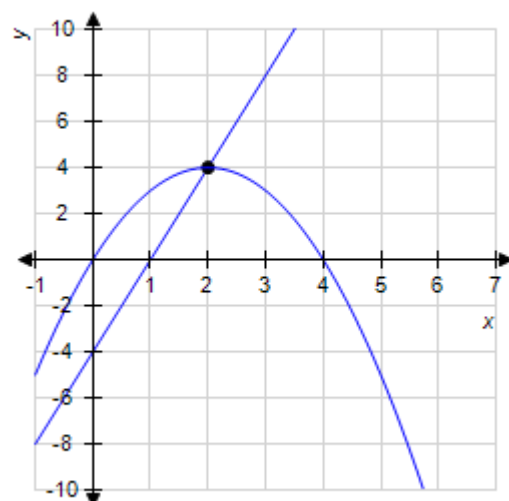
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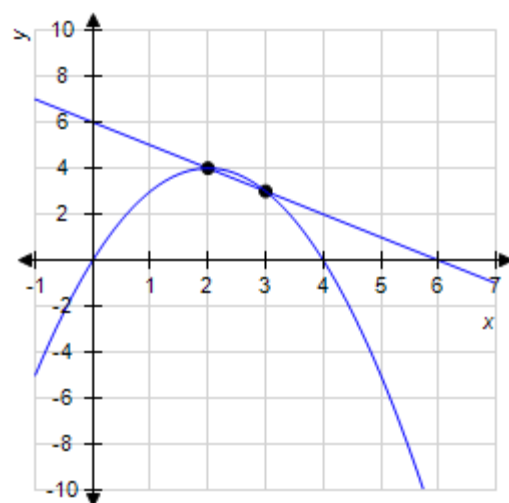
10. Consider the function $f(x) = 4x - x^2$ and the point $P(2, 4)$ on the graph of f . Graph f and the secant line passing through $P(2, 4)$ and $Q(x, f(x))$ for $x = 1$.

- a.
- b.

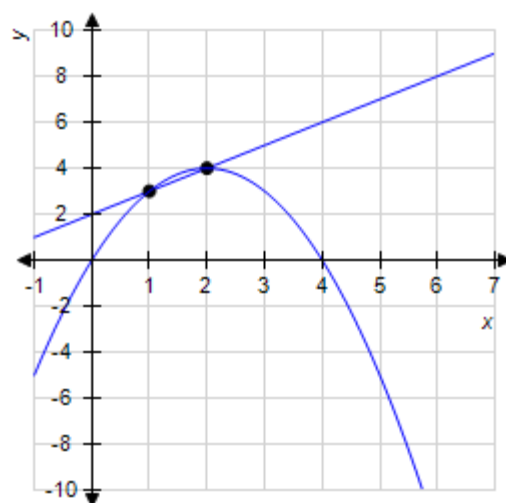
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c.

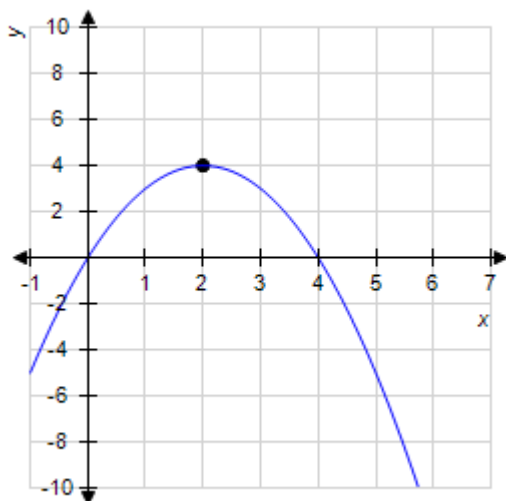


d.



e.

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ANSWER: d
 POINTS: 1
 DIFFICULTY: Easy
 REFERENCES: 2.1.7a
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: True
 LEARNING OBJECTIVES: CETF.LAED.11.75 - Graph a function and the secant line passing through given points
 OTHER: Skill
 NOTES: Section 2.1
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11. Consider the function $f(x) = 7x - x^2$ and the point $P(2, 10)$ on the graph of f . Find the slope of the secant line passing through $P(2, 10)$ and $Q(x, f(x))$ for $x = 2$. Round your answer to one decimal place.

- a. 4.5
- b. 3.0
- c. 3.0
- d. 4.5
- e. 4.0

ANSWER: b
 POINTS: 1
 DIFFICULTY: Easy
 REFERENCES: 2.1.7b
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: True

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LEARNING OBJECTIVES: CETF.LAED.11.76 - Calculate the slope of a secant line passing through given points

OTHER: Skill

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12. Consider the function $f(x) = 9x - x^2$ and the point $P(2, 14)$ on the graph of f . Estimate the slope of the tangent line of f at $P(2, 14)$.

- a. 11
- b. 6
- c. 9
- d. 5
- e. 10

ANSWER: d

POINTS: 1

DIFFICULTY: Medium

REFERENCES: 2.1.7c

QUESTION TYPE: Multiple Choice

HAS VARIABLES: True

LEARNING OBJECTIVES: CETF.LAED.11.78 - Calculate the slope of secant line passing through the given points

OTHER: Skill

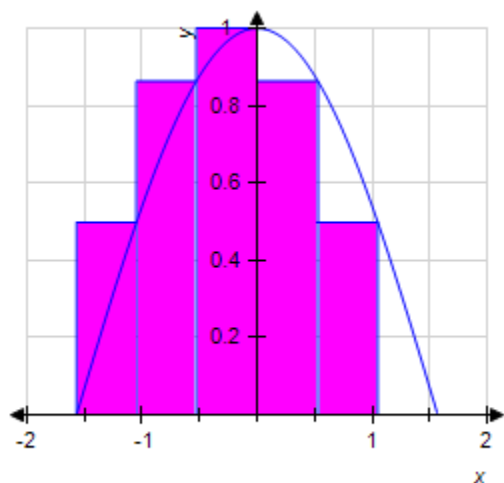
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13. Use the rectangles in the following graph to approximate the area of the region bounded by $y = \cos x$, $y = 0$, $x = -\frac{\pi}{2}$, and $x = \frac{\pi}{2}$.

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- a. 3.9082
- b. 2.6055
- c. 1.9541
- d. 1.4656
- e. 0.9770

ANSWER:

c

POINTS:

1

DIFFICULTY:

Medium

REFERENCES:

2.1.8a

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

True

LEARNING OBJECTIVES:

CETF.LAED.11.79 - Estimate the area of a region using rectangles

OTHER:

Skill

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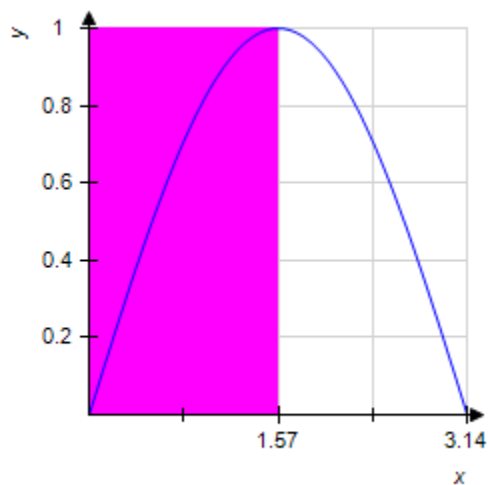
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14. Use the rectangles in the following graph to approximate the area of the region bounded by $y = \sin x$, $y = 0$, $x = 0$, and $x = \pi$.

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- a.0.7850
- b.1.5700
- c.3.1400
- d.1.1775
- e.1.0519

ANSWER:b

POINTS:1

DIFFICULTY:Medium

REFERENCES:2.1.8b

QUESTION TYPE:Multiple Choice

HAS VARIABLES:True

LEARNING OBJECTIVES:CETF.LAED.11.79 - Estimate the area of a region using rectangles

OTHER:Skill

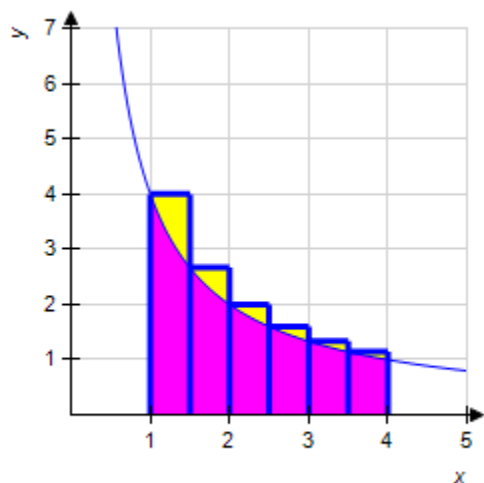
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15. Use the rectangles in the graph given below to approximate the area of the region bounded by $y = \frac{4}{x}$, $y = 0$, $x = 1$, and $x = 4$. Round your answer to three decimal places.

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- a. 2.481 units²
- b. 6.371 units²
- c. 3.585 units²
- d. 6.872 units²
- e. 6.903 units²

ANSWER:

b

POINTS:

1

DIFFICULTY:

Medium

REFERENCES:

2.1.9a

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

True

LEARNING OBJECTIVES:

CETF.LAED.11.79 - Estimate the area of a region using rectangles

OTHER:

Skill

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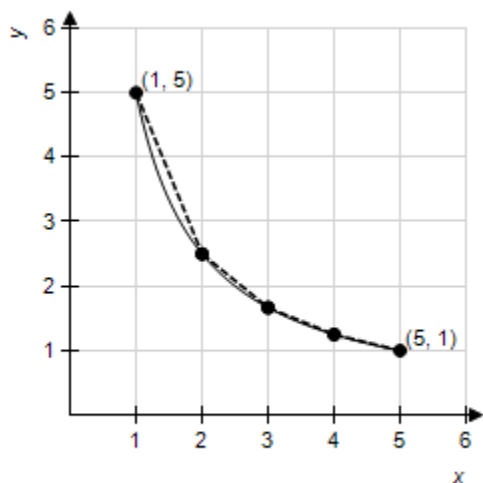
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$$f(x) = \frac{5}{x} \text{ from } (1, 5) \text{ to } (5, 1)$$

16. Consider the length of the graph of $f(x) = \frac{5}{x}$ from $(1, 5)$ to $(5, 1)$. Approximate the length of the curve by finding the sum of the lengths of four line segments, as shown in following figure. Round your answer to two decimal places.

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- a. 6.11
- b. 8.12
- c. 5.66
- d. 8.49
- e. 7.11

ANSWER:

a

POINTS:

1

DIFFICULTY:

Medium

REFERENCES:

2.1.11b

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

True

LEARNING OBJECTIVES: CETF.LAED.11.80 - Estimate the length of the curve using a piecewise linear function

OTHER:

Skill

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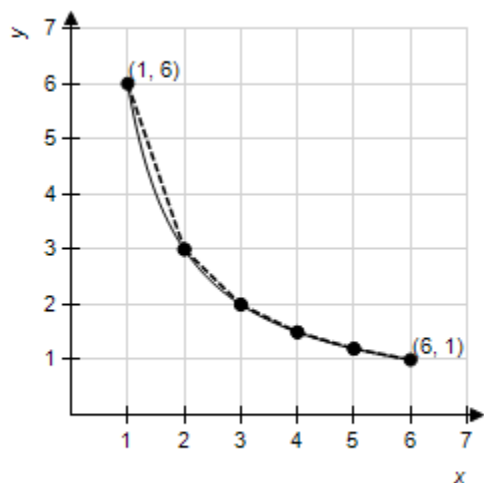
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$$f(x) = \frac{6}{x} \text{ from } (1, 6) \text{ to } (6, 1)$$

17. Consider the length of the graph of $f(x) = \frac{6}{x}$ from $(1, 6)$ to $(6, 1)$. Approximate the length of the curve by finding the sum of the lengths of five line segments, as shown in following figure. Round your answer to two decimal places.

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- a. 7.76
- b. 9.77
- c. 7.07
- d. 9.9
- e. 8.76

ANSWER:

a

POINTS:

1

DIFFICULTY:

Medium

REFERENCES:

2.1.11b

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

True

LEARNING OBJECTIVES: CETF.LAED.11.80 - Estimate the length of the curve using a piecewise linear function

OTHER:

Skill

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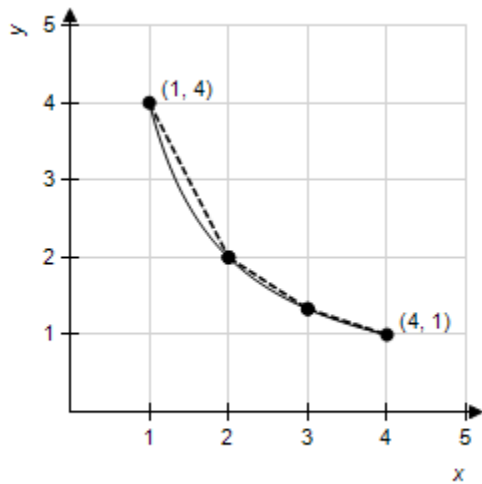
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$$f(x) = \frac{4}{x} \text{ from } (1, 4) \text{ to } (6, \frac{2}{3})$$

18. Consider the length of the graph of $f(x) = \frac{4}{x}$ from $(1, 4)$ to $(6, \frac{2}{3})$. Approximate the length of the curve by finding the sum of the lengths of three line segments, as shown in following figure. Round your answer to two decimal places.

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- a. 4.49
- b. 6.52
- c. 4.24
- d. 7.07
- e. 5.51

ANSWER: a
 POINTS: 1
 DIFFICULTY: Medium
 REFERENCES: 2.1.11b
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: True
 LEARNING OBJECTIVES: CETF.LAED.11.80 - Estimate the length of the curve using a piecewise linear function
 OTHER: Skill
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