Started on
Friday, 16 February 2024, 7:36 AM

State
Finished

Completed on
Friday, 16 February 2024, 7:44 AM

Time taken
7 mins 37 secs

Marks
20.00/20.00

Grade
10.00 out of 10.00 (100%)

Question 1

Correct

Mark 1.00 out of 1.00

Find an equation for the line tangent to the curve at the point defined by the given value of t.

$x = t + \cos t,\ y = 2 - \sin t,\ t = \frac{\pi}{6}$

Select one:

A. $y = -\sqrt{2}x - \frac{\sqrt{2}}{4}\pi + 2$

B. $y = -\sqrt{3}x + \frac{\sqrt{3}}{6}\pi + 3$ ✓

C. $y = \sqrt{3}x - \frac{\sqrt{3}}{6}\pi$

D. $y = -\sqrt{3}x + \frac{3}{2}$

The correct answer is: $y = -\sqrt{3}x + \frac{\sqrt{3}}{6}\pi + 3$

Question 2

Correct

Mark 1.00 out of 1.00

Find the value of d^2y/dx^2 at the point defined by the given value of t.

$x = 8t^2 - 5, y = t^3, t = 1$

Select one:

A. $-\frac{3}{16}$

B. $\frac{3}{256}$ ✓

C. $-\frac{3}{256}$

D. $\frac{3}{16}$

The correct answer is: $\frac{3}{256}$

Question 3

Correct

Mark 1.00 out of 1.00

Find the length of the curve.

$x = 4 \sin t + 4t, y = 4\cos t, 0 \le t \le \pi$

Select one:

- A. 24
- B. 8
- C. 4π
- D. 16 ✓

The correct answer is: 16

Question 4

Correct

Mark 1.00 out of 1.00

Describe the graph of the polar equation.

$4r \cos \theta + r \sin \theta = 3$

Select one:

- A. Vertical line passing through (4, 0)
- B. Line with slope 3 and y-intercept (0, 4)
- C. Parabola with vertex (4, 3) opening upward
- D. Line with slope -4 and y-intercept (0, 3) ✓

The correct answer is: Line with slope -4 and y-intercept (0, 3)

Question 5

Correct

Mark 1.00 out of 1.00

Find the area enclosed by the given curves.

$y = 2x - x^2$, $y = 2x - 4$

Select one:

A. $\frac{31}{3}$

B. $\frac{32}{3}$ ✓

C. $\frac{37}{3}$

D. $\frac{34}{3}$

The correct answer is: $\frac{32}{3}$

Question 6

Correct

Mark 1.00 out of 1.00

Find the area enclosed by the given curves.

Find the area of the region between the curve $y = 6x/(1 + x^2)$ and the interval $-3 \leq x \leq 3$ of the x-axis.

Select one:

- A. $6 \ln 10$ ✓
- B. $\ln 10$
- C. $6 e^{10}$
- D. 0

The correct answer is: $6 \ln 10$

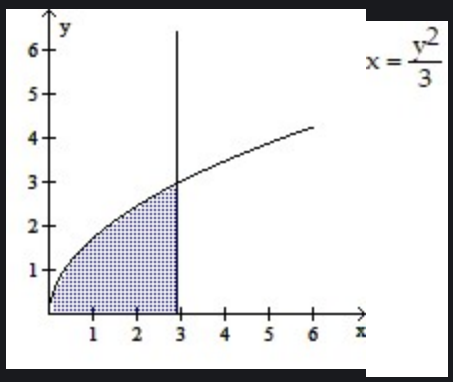
Question 7

Correct

Mark 1.00 out of 1.00

Find the volume of the solid generated by revolving the shaded region about the given axis.

About the y-axis



Select one:

A. $\frac{45}{2}\pi$

B. $\frac{108}{5}\pi$ ✓

C. 18π

D. $\frac{27}{5}\pi$

The correct answer is: $\frac{108}{5}\pi$

Question 8

Correct

Mark 1.00 out of 1.00

Find the volume of the solid generated by revolving the region bounded by the given lines and curves about the x-axis.

$y = x^2 + 2, y = 4x + 2$

Select one:

A. $\frac{1984}{15}\pi$

B. 64π

C. $\frac{896}{5}\pi$ ✓

D. $\frac{4352}{15}\pi$

The correct answer is: $\frac{896}{5}\pi$

Question 9

Correct

Mark 1.00 out of 1.00

Find the volume of the solid generated by revolving the region about the given line.

The region bounded above by the line $y = 4$, below by the curve $y = 4 - x^2$, and on the right by the line $x = 2$, about the line $y = 4$

Select one:

- A. $\frac{32}{5}\pi$ ✓
- B. $\frac{8}{3}\pi$
- C. $\frac{256}{15}\pi$
- D. $\frac{224}{15}\pi$

The correct answer is: $\frac{32}{5}\pi$

Question 10

Correct

Mark 1.00 out of 1.00

Find the volume of the solid generated by revolving the region about the given axis. Use the shell or washer method.

The region bounded by $y = 4\sqrt{x}$, $y = 4$, and $x = 0$ about the line $x = 1$

Select one:

A. $\frac{14}{15}\pi$

B. $\frac{28}{15}\pi$ ✓

C. $\frac{68}{15}\pi$

D. $\frac{32}{15}\pi$

The correct answer is: $\frac{28}{15}\pi$

Question 11

Correct

Mark 1.00 out of 1.00

Find the volume of the solid generated by revolving the region about the given axis. Use the shell or washer method.

The region in the first quadrant bounded by $x = 6y - y^2$ and the y-axis about the x-axis

Select one:

A. 108π

B. 216π ✓

C. 324π

D. 162π

The correct answer is:216π

Question 12

Correct

Mark 1.00 out of 1.00

Find the length of the curve.

$y = \frac{1}{6}x^3 + \frac{1}{2x}$ from $x = 1$ to $x = 2$

Select one:

- A. $\frac{5}{3}$
- B. $\frac{17}{6}$
- C. $\frac{17}{16}$
- D. $\frac{17}{12}$ ✓

The correct answer is: $\frac{17}{12}$

Question 13

Correct

Mark 1.00 out of 1.00

Find the area of the surface generated by revolving the curve about the indicated axis.

$x = 3\sqrt{4 - y}$, $0 \le y \le 15/4$; y-axis

Select one:

A. $5\pi\sqrt{10}$

B. $\left(\frac{125}{2} - 5\sqrt{10}\right)\pi$ ✓

C. $\frac{125}{2}\pi$

D. $\left(\frac{125}{2} + 5\sqrt{10}\right)\pi$

The correct answer is: $\left(\frac{125}{2} - 5\sqrt{10}\right)\pi$

Question 14

Correct

Mark 1.00 out of 1.00

Find the area of the surface generated by revolving the curve about the indicated axis.

$y = \frac{e^x + e^{-x}}{2}$, $0 \le x \le \ln 7$; x-axis

Select one:

A. $\frac{24}{7}\pi$

B. $\pi \ln 7$

C. $\pi\left(\frac{600}{49} + \ln 7\right)$ ✓

D. $\pi\left(\frac{1250}{49} + \ln 7\right)$

The correct answer is: $\pi\left(\frac{600}{49} + \ln 7\right)$

Question 15

Correct

Mark 1.00 out of 1.00

Find the length of the curve.

$x = \frac{2}{3}(t^2 + 3)^{3/2}$, $y = 3t$, $0 \le t \le 1$

Select one:

- A. $\frac{5}{3}$
- B. $\frac{10}{3}$
- C. 11
- D. $\frac{11}{3}$ ✓

The correct answer is: $\frac{11}{3}$

Question 16

Correct

Mark 1.00 out of 1.00

Replace the polar equation with an equivalent Cartesian equation.

$r = -5 \csc \theta$

Select one:

- A. $y = -5$ ✓
- B. $-5y = 1$
- C. $x = -5$
- D. $-5x = 1$

The correct answer is: $y = -5$

Question 17

Correct

Mark 1.00 out of 1.00

Replace the polar equation with an equivalent Cartesian equation.

$r = \frac{1}{9\cos\theta - 8\sin\theta}$

Select one:

A. $\frac{x}{9} + \frac{y}{8} = 1$

B. $9x - 8y = 1$ ✓

C. $9y - 8x = 1$

D. $\frac{1}{9x - 8y} = 1$

The correct answer is: $9x - 8y = 1$

Question 18

Correct

Mark 1.00 out of 1.00

Replace the Cartesian equation with an equivalent polar equation.

$x^2 + y^2 - 4x = 0$

Select one:

- A. $r = 4 \cos \theta$ ✓
- B. $r \cos^2\theta = 4 \sin \theta$
- C. $r \sin^2\theta = 4 \cos \theta$
- D. $r = 4 \sin \theta$

The correct answer is: r= 4 cos θ

Question 19

Correct

Mark 1.00 out of 1.00

Replace the Cartesian equation with an equivalent polar equation.

$x^2 + (y - 19)^2 = 361$

Select one:

- A. $r = 38 \cos \theta$
- B. $r = 38 \sin \theta$ ✓
- C. $r = 19 \sin \theta$
- D. $r^2 = 38 \cos \theta$

The correct answer is: r = 38 sin θ

Question 20

Correct

Mark 1.00 out of 1.00

Find the area of the specified region.

Shared by the circles r = 2 and r = 4 sin θ

Select one:

A. 2π

B. $\frac{4}{3}\pi$

C. $\frac{2}{3}(4\pi - 3\sqrt{3})$ ✓

D. $\frac{2}{3}(2\pi + 3\sqrt{3})$

The correct answer is: $\frac{2}{3}(4\pi - 3\sqrt{3})$

Finish review

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On the lands that we study, we walk, and we live, we acknowledge and respect the traditional custodians and cultural knowledge holders of these lands.

University of Wollongong

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