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NPTEL

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Unit 9 - Week 7 :

Register for Certification exam

Course outline

Assignment 7

The due date for submitting this assignment has passed. **Due on 2019-03-20, 23:59 IST**
As per our records you have not submitted this assignment.

1) If A be the region inside the cardioid $r = 3(1 + \cos\theta)$, then *0 points*

$$\iint_A r^2 \sin\theta \; d\theta \; dr = \_\_\_\_\_.$$

a. 16
b. 72
c. 0
d. 30

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

2) *1 point*

$$\int_0^2 \int_0^{\sqrt{2x-x^2}} (x^2 + y^2) dy \, dx = \_\_\_\_\_.$$

a. π
b. 2π
c. $\frac{3\pi}{4}$
d. $\frac{\pi}{2}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Week 10 :
Week 11 :
Week 12 :
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Assignment Solution

Develo

Using transformation $x + y = u$ and $y = uv$, the value of the integral $\int_0^1 \int_0^{1-x} e^{\frac{y}{x+y}} dy\, dx$

a. $\frac{e-1}{2}$
b. $\frac{e-1}{3}$
c. 0
d. $\frac{1}{2}$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

4) If $R = \{0 \leq x^2 + y^2 \leq 1, x>=0, y>=0\}$, then *1 point*

$$\iint_R \sqrt{\frac{1-x^2-y^2}{1+x^2+y^2}}\, dx\, dy = \_\_\_\_\_.$$

a. 2π
b. $\frac{\pi}{2} - 1$
c. $\frac{\pi}{4}\left(\frac{\pi}{2} - 1\right)$
d. $\frac{\pi}{4}$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

5) *1 point*

If R is the region bounded by $x + y = 0, x + y = 2, 3x - 2y = 0$ and $3x - 2y = 3$, then

$$\iint_R (x+y)^2\, dx\, dy = \_\_\_\_\_$$

a. $\frac{6}{5}$
b. $\frac{8}{5}$
c. 1
d. $\frac{20}{31}$

a.
b.
c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

6) **1 point**

The surface area of the cylinder $x^2 + z^2 = 4$ lying inside the cylinder $x^2 + y^2 = 4$ is

a. 32
b. 2π
c. $6\pi - 13$
d. 23

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

7) If R is the region bounded by $x = 0, y = 0, z = 0$ and $x + y + z = 1$, then **1 point**

$$\iiint_R (x^2 + y^2 + z^2)dx\,dy\,dz = \_\_\_\_\_.$$

a. $\frac{1}{20}$
b. 1
c. $\frac{\pi}{3}$
d. $\frac{1}{2}$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

8) **1 point**

$$\int_0^{2\pi}\int_0^{\frac{\pi}{4}}\int_0^{a} r^2 \sin\theta\, dr\, d\theta\, d\phi = \_\_\_\_\_.$$

a. $\frac{\pi a^3}{\sqrt{2}}(\sqrt{2} - 1)$
b. $\frac{2\pi a^3}{3\sqrt{2}}(\sqrt{2} - 1)$
c. $\frac{2\pi a^3}{3}(\sqrt{2} - 2)$
d. $\frac{2a^3}{3\sqrt{2}}(\sqrt{2} - 2)$

a.

b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

9) ***1 point***

The volume of the region bounded by the cylinder $x^2 + y^2 = 4$ and the planes $y + z = 4$ 0 is

a. 4π
b. 16π
c. π
d. 0

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

10) ***1 point***

The volume of the region bounded above by the sphere $x^2 + y^2 + z^2 = a^2$ and below by cone $x^2 + y^2 = z^2$ is

a. $\frac{\pi a^3}{5}(5 - \sqrt{2})$
b. $\frac{\pi a^3}{4}(4 - \sqrt{2})$
c. $\frac{\pi a^3}{2}(3 - \sqrt{2})$
d. $\frac{\pi a^3}{3}(2 - \sqrt{2})$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

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