

38. The maximum value of $f(x) = x^3 - 27x + 15$ occur at $x = ?$ A. 3 B. 4.89 ~~C. -3~~ D. $-27/15$

39. Given that $x = a \sin t$, $y = a \cos t$, y' is? ~~A. $-\tan t$~~ B. $\tan t$ C. $\cot t$ D. $-\cot t$

40. Integrate $\int \sec x \tan x dx$ ~~A. $\frac{\sec^2 x}{2}$~~ B. $\sec x$ C. $\ln \sec^2 x - \tan x$ D. $\frac{\tan^2 x}{2}$

41. Integrate $\int \frac{dx}{x - x \ln x}$ A. $\ln x$ B. $\ln x - x^{-2}$ C. $\ln(\ln x - 1)$ ~~D. $-\ln(1 - \ln x)$~~

42. Integrate $\int \sin^2 x dx$ A. $-\cos^2 x$ B. $1 + \cos^2 x$ ~~C. $\frac{1}{2}x - \frac{1}{2}\sin x \cos x$~~ D. $\frac{1}{2}x - \frac{1}{2}\sin 2x$

43. Integrate $\int x e^{-x} dx$ ~~A. $-(x+1)e^{-x}$~~ B. $x e^{x-1}$ C. $(-x e^{-x} + e^{-x})$ D. $(x-1)e^{-x}$

44. Given the function $y = e^x$, $f(x+h) - f(x)$ is A. $e^{(x+h)-x}$ ~~B. $e^x(e^h - 1)$~~ C. e^h D. e^{h-1}

45. Evaluate $\lim_{x \rightarrow 0} \frac{\sin x}{x}$ A. 0 B. ∞ ~~C. 1~~ D. π

46. If $I_n = \int \cot^n x dx$, A. $I_n = \frac{\cot^{n+1} x}{n+1} - I_{n-1}$ ~~B. $-\frac{\cot^{n-1} x}{n-1} - I_{n-2}$~~ C. $\frac{\cot^{n-1} x}{n-1} - I_{n-2}$ D. $-\frac{\cot^{n+1} x}{n+1} - I_{n-2}$

47. Find the area between the curve $y = x^3 - 6x^2 + 8x$ and the x -axis in square units is?

~~A. 8~~ B. -8 C. 0 D. 16

48. Evaluate $\int \sin x \cos x dx$ A. $\frac{-\sin^2 x}{2}$ B. $\frac{-\cos^2 x}{2}$ ~~C. $\frac{\sin^2 x}{2}$~~ D. $\frac{\cos^2 x}{2}$

49. Evaluate $\int_1^2 (1+x^2) dx$ A. $\frac{1}{2}$ B. $\frac{1}{4}$ ~~C. $\frac{10}{3}$~~ D. $\frac{5}{3}$

50. If the motion of a particle is specified by $x = 5t^4 - 2t^2$. Find the velocity after 5 seconds.

A. 160m/s B. 154m/s C. 120m/s D. 100m/s

2480M/S

Question 2

Not yet answered

Marked out of 1.00

🚩 Flag question

Obtain the integral $\int \frac{\sin 2x}{\sin x} dx$

Select one:

- ☐ a. $\frac{\cos^2 2x}{2}$
 - ☐ b. $\ln(\cos 2x)$
 - ☒ c. $2\sin x$
 - ☐ d. $\sin 2x$
- $2\sin x$

Given that $\int_{\frac{\pi}{4k}}^{\frac{\pi}{2k}} (1 - \pi \sin kx) dx = \pi(7 - 6\sqrt{2})$, find the value of k

Select one:

- ☐ a. $\frac{1}{4}$
- ☐ b. $\frac{1}{8}$
- ☐ c. $\frac{1}{10}$
- ☐ d. $\frac{1}{12}$

Answer: Option D



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Question 4

Not yet answered

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Find the first derivative of $\sec^{-1}(5x)$ with respect to x ?

Select one:

☐ a. $\frac{-1}{5x\sqrt{25x^2-1}}$

☐ b. $\frac{-1}{x\sqrt{25x^2-1}}$

☐ c. $\frac{-1}{x\sqrt{5x^2-1}}$

☒ d. $\frac{1}{x\sqrt{25x^2-1}}$

d

By Wallis' formula, evaluate

$$\int_0^{\frac{\pi}{2}} \cos^5 x \sin^2 x dx$$

Select one:

☒ a. $\frac{8}{105}$

☐ b. $\frac{9}{79}$

☐ c. $\frac{9}{200}$

☐ d. $\frac{19}{109}$

A

Question 6

Not yet answered

Marked out of 1.00

🚩 Flag question

By Wallis' formula, evaluate $\int_0^{\frac{\pi}{2}} \sin^5 x dx$

Select one:

- ☐ a. $\frac{8}{17}$
- ☐ b. $\frac{19}{20}$
- ☒ c. $\frac{8}{15}$
- ☐ d. $\frac{8}{13}$

C

Question 7

Not yet answered

Marked out of 1.00

🚩 Flag question

Obtain $\int \frac{e^x}{4+e^x} dx$

Select one:

- ☐ a. $\frac{-e^x}{(4+e^x)^2}$
- ☐ b. $\frac{-1}{2(4+e^x)^2}$
- ☒ c. $\ln(4+e^x)$
- ☐ d. $\frac{1}{2(4+e^x)^3}$

C

Question 8

Not yet answered

Marked out of 1.00

🚩 Flag question

Evaluate $\int_1^4 \left(\frac{1}{8} x^{\frac{3}{2}} - \frac{4}{x} \right) dx, \quad x > 0$

Select one:

- ☐ a. 2
- ☐ b. 3
- ☒ c. 4
- ☐ d. 5

C -4

Question 9

Not yet answered

Marked out of 1.00

🚩 Flag question

Given that $\int_0^{\theta} 4 \sin 2x \cos^4 2x dx = \frac{4}{5}$,

where $0 < \theta < \pi$ find the exact value of θ

Select one:

- ☒ a. $\frac{\pi}{2}$
- ☐ b. $\frac{\pi}{20}$
- ☐ c. $\frac{\pi}{10}$
- ☐ d. $\frac{\pi}{15}$

A

Question 10

Not yet answered

Marked out of 1.00

🚩 Flag question

Given that $\int_0^{\theta} 5 \tan x \sec^4 x dx = \frac{15}{4}$,

where $0 < \theta < \frac{\pi}{2}$ find the exact value of θ

Select one:

A

- ☒ a. $\frac{\pi}{4}$
- ☐ b. $\frac{\pi}{5}$
- ☐ c. $\frac{\pi}{6}$
- ☐ d. $\frac{\pi}{7}$

Question 11

Not yet answered

Marked out of 1.00

🚩 Flag question

Obtain the integral $\int \sec x dx$

Select one:

- ☐ a. $\sec x \tan x$
- ☒ b. $\ln(\sec x + \tan x)$
- ☐ c. $\tan^2 x$
- ☐ d. $-\cot^2 x$

B



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Question 12

Not yet answered

Marked out of 1.00

🚩 Flag question

By Wallis' formula, evaluate $\int_0^{\frac{\pi}{2}} \cos^4 x \, dx$

Select one:

- ☐ a. $\frac{3\pi}{17}$
- ☐ b. $\frac{19\pi}{20}$
- ☒ c. $\frac{3\pi}{16}$
- ☐ d. $\frac{3\pi}{20}$

C

WHAT I'LL DELIVER

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Mentorship Programs

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#Activeness

Improved Faculty Security
(Functional CCTVs)

GABRIEL UNOMAH
(ANONYMOUS) *as* **FACULTY PRESIDENT**
Faculty Of Physical & Earth Sciences



Question 13

Not yet answered

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Given that $\int_0^k kx^2 e^{x^3} dx = \frac{2}{3}(e^8 - 1)$, find the value of k

Select one:

- ☐ a. 1
- ☒ b. 2
- ☐ c. 3
- ☐ d. 4

2 B

Question 14

Not yet answered

Marked out of 1.00

🚩 Flag question

Evaluate $\int_0^{\frac{\pi}{4}} \sec^2 x e^{4 \tan x} dx$

Select one:

- ☐ a. $\frac{1}{2}(e^4 + 1)$
- ☐ b. $\frac{1}{2}(e^4 - 1)$
- ☐ c. $\frac{1}{4}(e^4 + 1)$
- ☒ d. $\frac{1}{4}(e^4 - 1)$

D

Question 15

Not yet answered

Marked out of 1.00

🚩 Flag question

If $f(x) = xe^{-x}$. find $f''(x)$

Select one:

- ☐ a. $(x + 1)e^{-x}$
- ☐ b. $(x - 1)e^{-x}$
- ☒ c. $(x - 2)e^{-x}$
- ☐ d. $(x + 2)e^{-x}$

C



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Question 16

Not yet answered

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 Flag question

Find two positive numbers whose sum is 105 and product is maximum

Select one:

- ☐ a. 60 and 45
- ☐ b. 30 and 75
- ☒ c. 50 and 55
- ☐ d. 80 and 25

C



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Question 17

Not yet answered

Marked out of 1.00

 Flag question

Evaluate $\int_0^{\pi} \sin^3 t \, dt$

Select one:

- ☐ a. $\frac{1}{2}$
- ☐ b. $-\frac{1}{2}$
- ☒ c. $\frac{4}{3}$
- ☐ d. $-\frac{4}{3}$

C

Question 18

Not yet answered

Marked out of 1.00

🚩 Flag question

Find the integral $\int \frac{(x+1)dx}{x^2 - x - 6}$

Select one:

- ☒ a. $\ln \sqrt[5]{(x-3)^4(x+2)}$
- ☐ b. $\ln \sqrt[5]{\frac{(x-3)^4}{x+2}}$
- ☐ c. $\ln \sqrt[5]{\frac{x+2}{(x-3)^4}}$
- ☐ d. $\ln \left[\frac{x+2}{x-3} \right]$

A

Question 19

Not yet answered

Marked out of 1.00

🚩 Flag question

Evaluate $\frac{d^2}{dx^2} \left(3\sqrt{x} - \frac{5}{x\sqrt{x}} \right)$

Select one:

- ☐ a. $-\frac{3}{4x\sqrt{x}} - \frac{25}{4x^3\sqrt{x}}$
- ☐ b. $-\frac{3}{4x\sqrt{x}} + \frac{75}{4x^3\sqrt{x}}$
- ☒ c. $-\frac{3}{4x\sqrt{x}} - \frac{75}{4x^3\sqrt{x}}$
- ☐ d. $-\frac{3}{2x\sqrt{x}} - \frac{75}{2x^3\sqrt{x}}$

C

Question 20

Not yet answered

Marked out of 1.00

🚩 Flag question

Evaluate the integral $\int_{-1}^0 x(\sqrt{x+1})dx$

Select one:

- ☐ a. $\frac{4}{9}$
- ☐ b. $\frac{4}{15}$
- ☒ c. $-\frac{4}{15}$
- ☐ d. $-\frac{14}{9}$

C