ALBERTA MATH 31 · UNIT 4 · 25 QUESTIONS

Integrals — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 $\int 5x^4\,dx$ is equal to

- **A** $x^5 + C$
- **B** $5x^5 + C$
- **C** $20x^3 + C$
- **D** $\frac{x^5}{5} + C$

Understand It with Pulse | Flag a mistake

2 $\int (2x - 3)\,dx$ is equal to

- **A** $x^2 + C$
- **B** $x^2 - 3x + C$
- **C** $2x^2 - 3x + C$
- **D** $x^2 - 3 + C$

Understand It with Pulse | Flag a mistake

3 $\int e^{3x}\,dx$ is equal to

A $3e^{3x} + C$

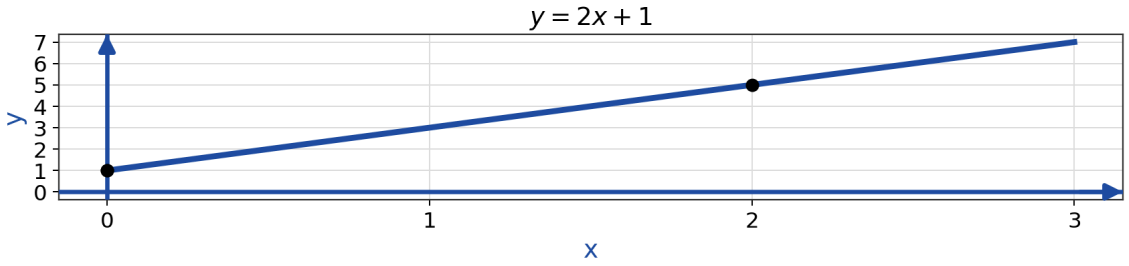
B $e^{3x} + C$

C $\frac{e^{3x}}{3} + C$

D $\frac{e^{3x}}{3x} + C$

Understand It with Pulse | Flag a mistake

4 The graph of a function f is shown. The value of $\int_0^2 f(x)\,dx$ is



A 6

B 4

C 8

D 5

Understand It with Pulse | Flag a mistake

5 $\int \frac{1}{x} dx$ is equal to

A $\ln|x| + C$

B $-\frac{1}{x^2} + C$

C $\frac{1}{x} + C$

D $x\ln x + C$

Understand It with Pulse | Flag a mistake

6 $\int (x + \frac{1}{x})^2 \, dx$ is equal to

A $\frac{x^3}{3} + \frac{1}{x} + C$

B $\frac{x^3}{3} + 2x - \frac{1}{x} + C$

C $\frac{(x + \frac{1}{x})^3}{3} + C$

D $\frac{x^3}{3} + 2x + \frac{1}{x} + C$

Understand It with Pulse | Flag a mistake

7 The value of $\int_1^4 \sqrt{x}\, dx$ is

A $\frac{8}{3}$

B $\frac{7}{2}$

C $\frac{14}{3}$

D $\frac{16}{3}$

Understand It with Pulse | Flag a mistake

8 The value of $\int_0^{\pi} \sin x\, dx$ is

A 0

B 1

C -2

D 2

Understand It with Pulse | Flag a mistake

9 $\int \left(\frac{3}{x} + e^x\right) dx$ is equal to

- **A** $3\ln|x| + e^x + C$
- **B** $\frac{3}{x^2} + e^x + C$
- **C** $\ln|x| + e^x + C$
- **D** $3\ln|x| + \frac{e^x}{x} + C$

Understand It with Pulse | Flag a mistake

10 The value of $\int_0^2 (3x^2 - 1)\, dx$ is

- **A** 4
- **B** 6
- **C** 8
- **D** 10

Understand It with Pulse | Flag a mistake

11 $\int \sec^2 x \, dx$ is equal to

A. $\sec x \tan x + C$

B. $-\cot x + C$

C. $\tan x + C$

D. $\ln|\sec x| + C$

Understand It with Pulse | Flag a mistake

12 If $F(x) = \int_2^x (t^3 + 1)\, dt$, then $F'(x)$ is

A. $\frac{x^4}{4} + x$

B. $3x^2$

C. x^3

D. $x^3 + 1$

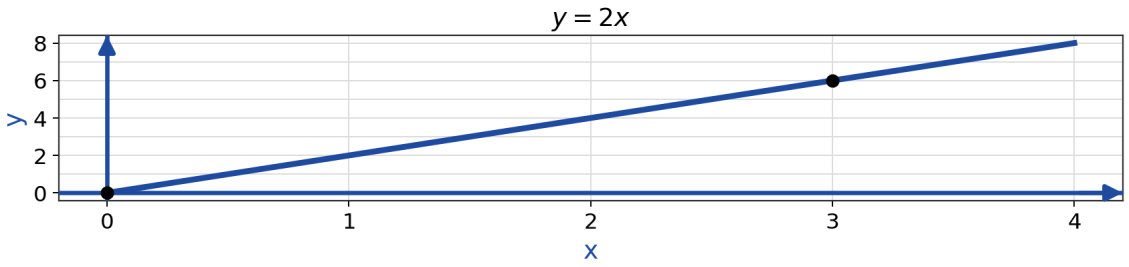
Understand It with Pulse | Flag a mistake

13 **If $F'(x) = 3x^2$ and $F(1) = 5$, then the value of $F(2)$ is _____ Record your answer as an integer.**

ANSWER _____

Understand It with Pulse | Flag a mistake

14 **The graph of a function f is shown. The area of the region under the graph of f and above the x-axis, from x = 0 to x = 3, is**



A 9

B 3

C 27

D 6

Understand It with Pulse | Flag a mistake

15 $\int (2x + 1)^3 \, dx$ is equal to

A $\frac{(2x + 1)^4}{4} + C$

B $\frac{(2x + 1)^4}{8} + C$

C $\frac{(2x + 1)^3}{3} + C$

D $4(2x + 1)^2 + C$

Understand It with Pulse | Flag a mistake

16 **The exact value of $\int_0^9 \sqrt{x} \, dx$ is _____ Record your answer as an integer.**

ANSWER _____

Understand It with Pulse | Flag a mistake

17 The area of the region enclosed by the graphs of $y = x$ and $y = x^2$ is

A $\frac{1}{2}$

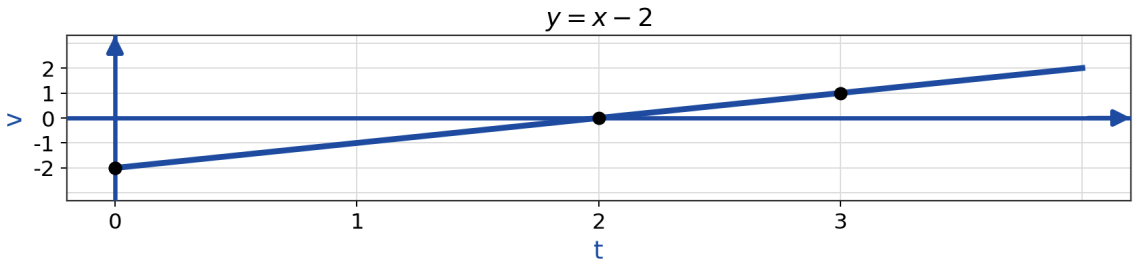
B $\frac{1}{3}$

C $\frac{1}{6}$

D $\frac{5}{6}$

Understand It with Pulse | Flag a mistake

18 The graph of the velocity of a particle is shown, where $0 \leq t \leq 3$. The total distance travelled by the particle, in metres, is _____ Record your answer to the nearest tenth.



ANSWER _____

Understand It with Pulse | Flag a mistake

19 The average value of $f(x) = \sin x$ on the interval $[0, \pi]$ is

A $\frac{1}{\pi}$

B 2

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

D $\frac{2}{\pi}$

Understand It with Pulse | Flag a mistake

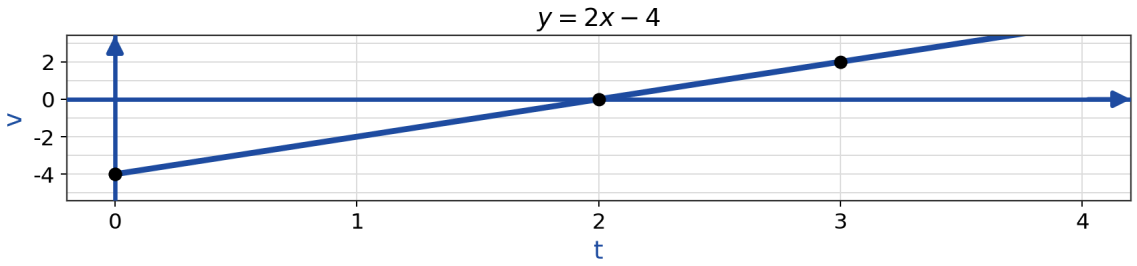
20 **Water flows into a tank at a rate of r(t) = 2t + 3 litres per minute. The total number of litres that flow into the tank during the first 5 minutes is _____ Record your answer as an integer.**



ANSWER _____

Understand It with Pulse | Flag a mistake

21 **The graph of the velocity of an object is shown. The displacement of the object from t = 0 to t = 3 is**



A -3 m

B 3 m

C -5 m

D 0 m

Understand It with Pulse | Flag a mistake

22 **The value of $\int_0^1 e^{2x}\,dx$, to the nearest hundredth, is _____ Record your answer to the nearest hundredth.**

ANSWER _____

Understand It with Pulse | Flag a mistake

23 The value of $\int_{-1}^{1} x^3\,dx$ is

A $\frac{1}{2}$

B 0

C 2

D $-\frac{1}{2}$

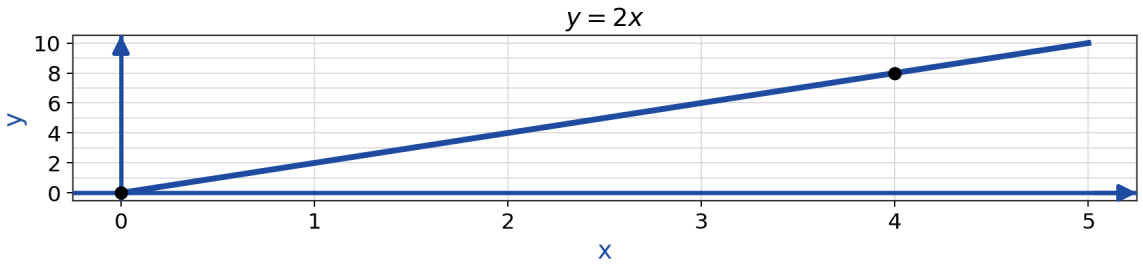
Understand It with Pulse | Flag a mistake

24 The value of $\int_{0}^{\pi} (1 + \sin x)\,dx$, to the nearest hundredth, is _____
Record your answer to the nearest hundredth.

ANSWER _____

Understand It with Pulse | Flag a mistake

25 **The graph of a function f is shown. The average value of f on the interval [0, 4] is _____ Record your answer as an integer.**



ANSWER

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. A
2. B
3. C
4. A
5. A
6. B
7. C
8. D
9. A
10. B
11. C
12. D
13. 12
14. A
15. B
16. 18
17. C
18. 2.5
19. D
20. 40
21. A
22. 3.19
23. B
24. 5.14
25. 4

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