ALBERTA MATH 134 · FULL COURSE · 50 QUESTIONS

Full Course — 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 **If $f(x) = 3x^2 - 2x + 5$, then $f(-2)$ is**

- A 13
- B 21
- C 9
- D 25

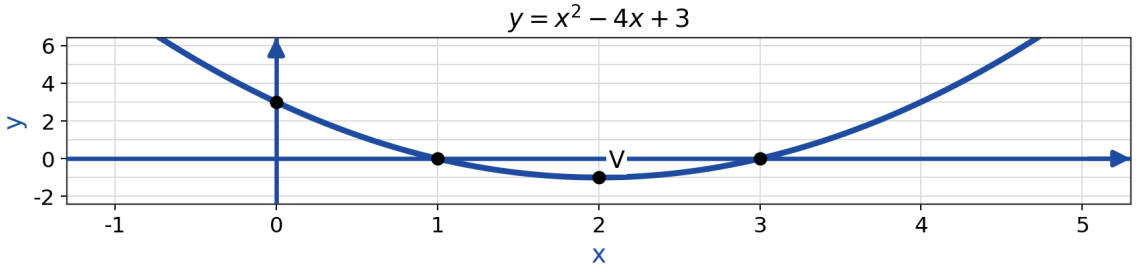
Understand It with Pulse | Flag a mistake

2 **The domain of $f(x) = \sqrt{x - 3}$ is**

- A $x \geq 3$
- B $x > 3$
- C $x \leq 3$
- D All real numbers

Understand It with Pulse | Flag a mistake

3 **The graph of f is shown. The x intercepts of f are**



A 1 and 3

B -1 and 3

C 2 and -1

D 1 and -3

Understand It with Pulse | Flag a mistake

4 The inverse of $f(x) = \frac{x - 3}{2}$ is

- **A** $2x - 3$
- **B** $\frac{x + 3}{2}$
- **C** $\frac{x}{2} + 3$
- **D** $2x + 3$

Understand It with Pulse | Flag a mistake

5 A population is modelled by $P(t) = 500e^{0.03t}$. The population after 10 years is approximately

- **A** 650
- **B** 675
- **C** 700
- **D** 600

Understand It with Pulse | Flag a mistake

6 **If $\log_2 x = 5$, then x is**

- A 32
- B 10
- C 25
- D 64

Understand It with Pulse | Flag a mistake

7 **The solution of $\ln(x - 1) = 2$ is**

- A $e^2 - 1$
- B $2e + 1$
- C $e^2 + 1$
- D $e + 2$

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8 $\lim_{x \to 0} \frac{\sin(3x)}{x}$ is

A 0

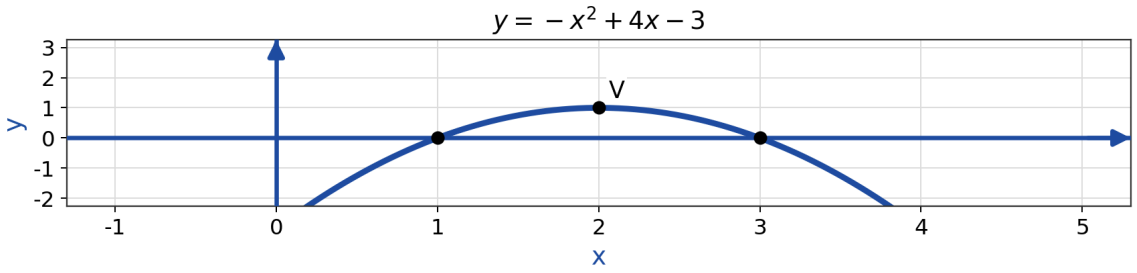
B 1

C $\frac{1}{3}$

D 3

Understand It with Pulse | Flag a mistake

9 The graph of f is shown. The maximum value of f is



A -1

B 1

C 2

D 3

Understand It with Pulse | Flag a mistake

10 For $f(x) = x^2$, the instantaneous rate of change at $x = 3$ is

- A 3
- B 9
- C 6
- D 12

Understand It with Pulse | Flag a mistake

11 If $f(x) = 4x^3 - 5x$, then $\frac{d}{dx} f(x)$ is

- A $12x^2 - 5$
- B $12x^2 + 5$
- C $4x^2 - 5$
- D $12x^3 - 5$

Understand It with Pulse | Flag a mistake

12 If $f(x) = x^2 e^x$, then $\frac{d}{dx} f(x)$ is

A $2xe^x$

B $x^2 e^x$

C $e^x(x^2 - 2x)$

D $e^x(x^2 + 2x)$

Understand It with Pulse | Flag a mistake

13 If $f(x) = \frac{x + 1}{x - 1}$, then $\frac{d}{dx} f(x)$ is

A $\frac{2}{(x - 1)^2}$

B $-\frac{2}{(x - 1)^2}$

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

D $\frac{1}{(x - 1)^2}$

Understand It with Pulse | Flag a mistake

14 If $f(x) = \sin(3x^2)$, then $\frac{d}{dx} f(x)$ is

- A $3\cos(3x^2)$
- B $-6x\cos(3x^2)$
- C $6x\cos(3x^2)$
- D $6x\sin(3x^2)$

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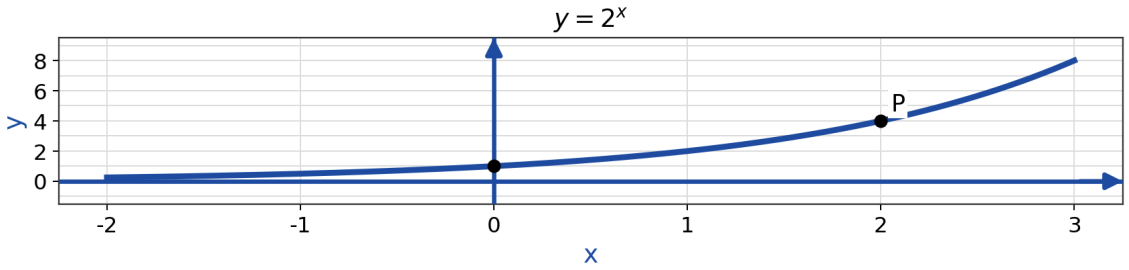
15 If $f(x) = 5e^{2x}$, then $\frac{d}{dx} f(x)$ is

- A $10e^{2x}$
- B $5e^{2x}$
- C $2e^{2x}$
- D $10e^{x}$

Understand It with Pulse | Flag a mistake

16 **The graph of f is shown. The value of f(2) is**



A 2

B 4

C 8

D 3

Understand It with Pulse | Flag a mistake

17 If $x^2 + y^2 = 25$, then $\frac{dy}{dx}$ is

- **A** $\frac{x}{y}$
- **B** $-\frac{x}{y}$
- **C** $\frac{y}{x}$
- **D** $-\frac{y}{x}$

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18 If $f(x) = x^4 - 3x^2$, then the second derivative of f is

- **A** $12x^2$
- **B** $4x^3 - 6x$
- **C** $12x^2 - 6$
- **D** $24x$

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19 The slope of the tangent line to $f(x) = x^2 + 2x$ at $x = 1$ is

- A 4
- B 3
- C 2
- D 6

Understand It with Pulse | Flag a mistake

20 A position is $s(t) = t^3 - 6t^2$. The velocity at $t = 2$ is

- A 12
- B 0
- C -6
- D -12

Understand It with Pulse | Flag a mistake

21 **The cost is $C(x) = 200 + 30x - 0.02x^2$ dollars. The marginal cost at $x = 100$ is (dollars per unit)**

- **A** 30
- **B** 28
- **C** 26
- **D** 20

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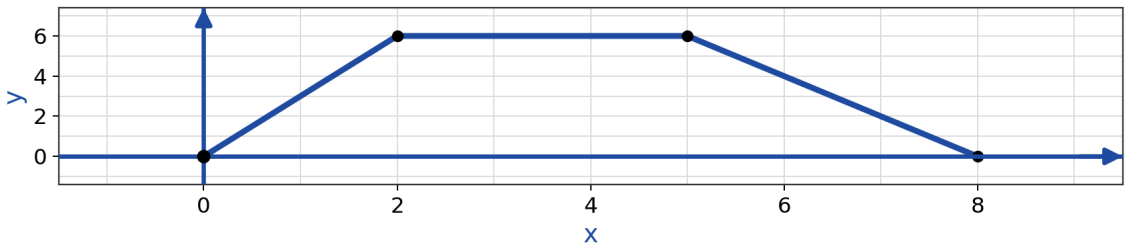
22 **The graph of f is shown. The slope of the first segment is**



- **A** 2
- **B** 6
- **C** 3
- **D** 0

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23 **The function $f(x) = x^2 - 4x$ is increasing on the interval**

- A $(2, \infty)$
- B $(-\infty, 2)$
- C $(-2, \infty)$
- D $(-\infty, -2)$

Understand It with Pulse | Flag a mistake

24 **The local maximum value of $f(x) = x^3 - 3x$ is**

- A -2
- B 0
- C 1
- D 2

Understand It with Pulse | Flag a mistake

25 The inflection point of $f(x) = x^3 - 6x^2$ occurs at x equal to

- A 0
- B 1
- C 2
- D 3

Understand It with Pulse | Flag a mistake

26 The absolute maximum of $f(x) = x^2$ on $[-1, 2]$ is

- A 1
- B 4
- C 0
- D 2

Understand It with Pulse | Flag a mistake

27 The horizontal asymptote of $f(x) = \frac{3x^2 + 1}{x^2 - 5}$ is

A y = 3

B y = 0

C y = 1

D y = -3

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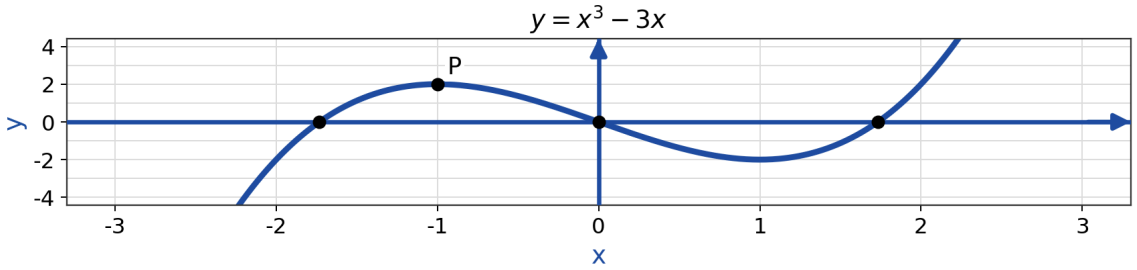
28 The graph of f is shown. The local maximum value of f is



A -2

B 0

C 2

D 4

Understand It with Pulse | Flag a mistake

29 A rectangle has perimeter 40 m. The maximum possible area, in m^2, is

- A 80
- B 90
- C 100
- D 120

Understand It with Pulse | Flag a mistake

30 The profit $P(x) = -x^2 + 40x - 100$ is maximized when x is

- A 10
- B 20
- C 30
- D 40

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31 $\lim_{x \to 0} \frac{e^x - 1}{x}$ is

A 1

B 0

C e

D 2

Understand It with Pulse | Flag a mistake

32 $\lim_{x \to \infty} \frac{5x^2 + 1}{2x^2 - 3}$ is

A 0

B 5

C 2

D $\frac{5}{2}$

Understand It with Pulse | Flag a mistake

33 $\int (3x^2 - 4x)\,dx$ is

- **A** $x^3 + 2x^2 + C$
- **B** $6x - 4 + C$
- **C** $x^3 - 2x^2 + C$
- **D** $x^2 - 2x + C$

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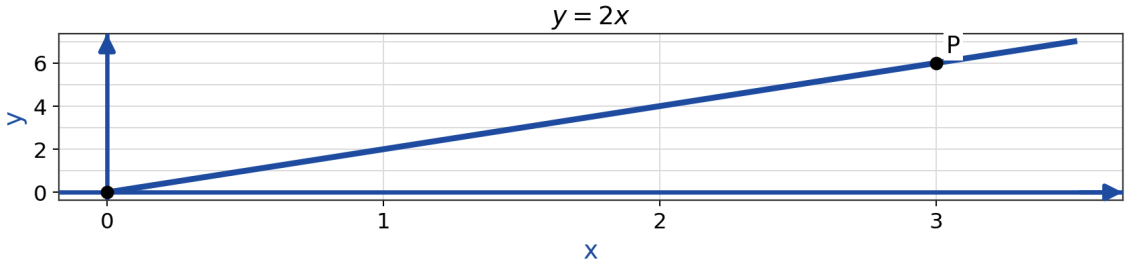
34 The graph of f is shown. The area under the graph from x = 0 to x = 3 is



- **A** 6
- **B** 18
- **C** 9
- **D** 12

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35 $\int \frac{2}{x} dx$ is

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

Understand It with Pulse | Flag a mistake

36 $\int \sqrt{x}\, dx$ is

- **A** $x^{1/2} + C$
- **B** $\frac{3}{2}x^{3/2} + C$
- **C** $\frac{1}{2}x^{-1/2} + C$
- **D** $\frac{2}{3}x^{3/2} + C$

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37 $\int_0^2 3x^2\,dx$ is

A 4

B 6

C 8

D 12

Understand It with Pulse | Flag a mistake

38 $\frac{d}{dx}\int_0^{x^2} e^t\,dt$ is

A e^{x^2}

B $2xe^{x^2}$

C e^{2x}

D $x^2 e^{x^2}$

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39 $\int 2x(x^2 + 1)^3 \, dx$ is

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

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

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

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

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40 $\int_0^1 3x^2 e^{x^3} \, dx$ is

A 1

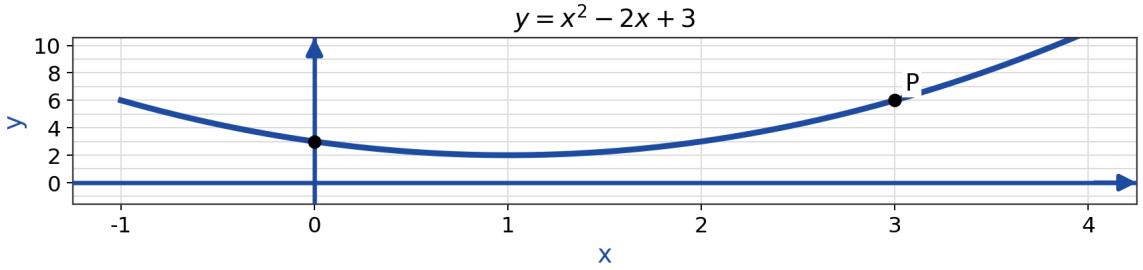
B e

C $\frac{1}{e}$

D e - 1

Understand It with Pulse | Flag a mistake

41 **The graph of f is shown. The value of f(3) is**



A 3

B 9

C 6

D 12

Understand It with Pulse

Flag a mistake

42 The area between $y = x$ and $y = x^2$ from $x = 0$ to $x = 1$ is

- **A** $\frac{1}{2}$
- **B** $\frac{1}{6}$
- **C** $\frac{1}{3}$
- **D** $\frac{2}{3}$

Understand It with Pulse | Flag a mistake

43 The average value of $f(x) = x^2$ on $[0, 3]$ is

- **A** 3
- **B** 9
- **C** 1
- **D** 6

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44 The velocity is $v(t) = 2t$. The displacement from $t = 0$ to $t = 4$ is

- A 4
- B 8
- C 12
- D 16

Understand It with Pulse | Flag a mistake

45 The marginal cost is $M(x) = 3x^2 + 2$ dollars per unit. The cost increase from $x = 0$ to $x = 2$ is (dollars)

- A 8
- B 10
- C 12
- D 14

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46 The radius of a circle grows at 2 cm per second. When r = 5 cm, the area grows at (cm² per second)

- A 20π
- B 40π
- C 10π
- D 25π

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47 A sample of 200 grams has a half life of 5 years. The amount remaining after 15 years is (grams)

- A 25
- B 50
- C 75
- D 100

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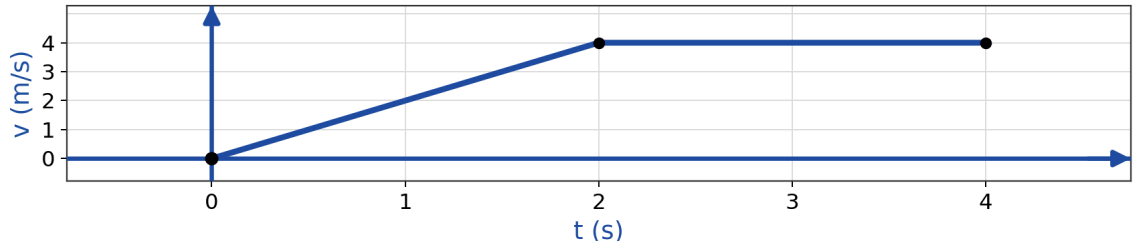
48 **The graph shows velocity against time. The displacement from t = 0 to t = 4 is**



- **A** 4
- **B** 8
- **C** 16
- **D** 12

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49 **The profit is $P(x) = -2x^2 + 80x - 600$ dollars. The maximum profit is (dollars)**

- **A** 100
- **B** 150
- **C** 200
- **D** 250

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50 The area between $y = 4 - x^2$ and $y = 0$ is

A $\frac{16}{3}$

B $\frac{32}{3}$

C 16

D 8

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ANSWER KEY

1. B
2. A
3. A
4. D
5. B
6. A
7. C
8. D
9. B
10. C
11. A
12. D
13. B
14. C
15. A
16. B
17. B
18. C
19. A
20. D
21. C
22. C
23. A
24. D
25. C
26. B
27. A
28. C
29. C
30. B
31. A
32. D
33. C
34. C
35. A
36. D
37. C
38. B
39. A
40. D
41. C
42. B
43. A
44. D
45. C
46. A
47. A
48. D
49. C
50. B

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