ONTARIO FUNCTIONS, GRADE 11, UNIVERSITY PREPARATION (MCR3U) · FINAL EXAM · 50 QUESTIONS

Final Exam — 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 **The domain of the function $f(x) = \sqrt{x - 5}$ is**

- A $x \geq -5$
- B $x > 5$
- C $x \leq 5$
- D $x \geq 5$

Understand It with Pulse | Flag a mistake

2 **The value of $f(t) = 100(2)^t$ when $t = 5$ is**

- A 3200
- B 1600
- C 3300
- D 500

Understand It with Pulse | Flag a mistake

3 **Angle A is acute, the opposite side has length 5 and the adjacent side has length 12 The value of tan A is**

- A $\frac{12}{5}$
- B $\frac{5}{12}$
- C $\frac{5}{17}$
- D $\frac{12}{17}$

Understand It with Pulse | Flag a mistake

4 **An arithmetic sequence has first term 5 and common difference 2 Its sixth term is**

- A 13
- B 17
- C 16
- D 15

Understand It with Pulse | Flag a mistake

5 The domain of the function $f(x) = \sqrt{x - 2}$ is

- **A** $x \geq 2$
- **B** $x \geq -2$
- **C** $x > 2$
- **D** $x \leq 2$

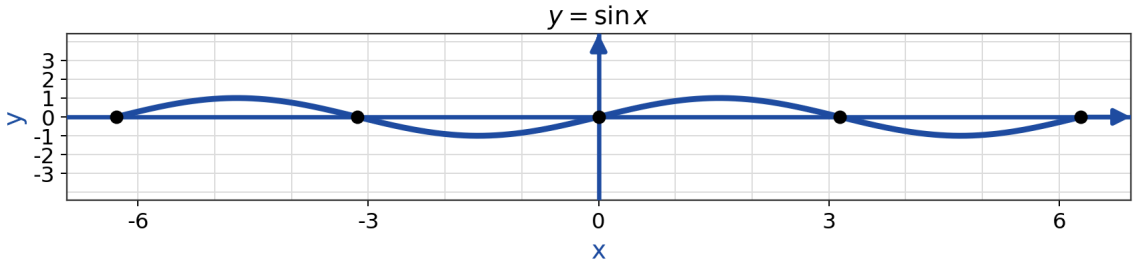
Understand It with Pulse | Flag a mistake

6 A sample of 800 grams decays by half every hour. The amount remaining after 2 hours, in grams, is

- **A** 400
- **B** 200
- **C** 100
- **D** 300

Understand It with Pulse | Flag a mistake

7 **The graph shows a sine function. Its amplitude is Figure 1**



- **A** 2
- **B** 3
- **C** 1
- **D** 12

Understand It with Pulse | Flag a mistake

8 **A geometric sequence has first term 3 and common ratio 2 Its fourth term is**

- **A** 24
- **B** 12
- **C** 48
- **D** 25

Understand It with Pulse | Flag a mistake

9 **Evaluating $f(x) = x^2 - 4$ at $x = 3$ gives**

ANSWER _____

Understand It with Pulse | Flag a mistake

10 **Solving $4^x = 256$ gives $x =$**

ANSWER _____

Understand It with Pulse | Flag a mistake

11 **Angle A is acute and $\sin A = \frac{3}{5}$ The value of cos A is**

A $\frac{3}{5}$

B $\frac{4}{5}$

C $\frac{5}{4}$

D $\frac{5}{3}$

Understand It with Pulse | Flag a mistake

12 **An arithmetic series has first term 2 and common difference 3 The sum of its first 5 terms is**

A 45

B 35

C 40

D 43

Understand It with Pulse | Flag a mistake

13 **The vertex of the parabola $y = (x - 3)^2 - 2$ is**

A (-3, -2)

B (3, 2)

C (-3, 2)

D (3, -2)

Understand It with Pulse | Flag a mistake

14 The solution of the equation $2^x = 32$ is x equal to

- A 6
- B 5
- C 4
- D 7

Understand It with Pulse | Flag a mistake

15 Angle A is acute, the opposite side has length 8 and the adjacent side has length 15 The value of tan A is

- A $\frac{15}{8}$
- B $\frac{8}{23}$
- C $\frac{15}{23}$
- D $\frac{8}{15}$

Understand It with Pulse | Flag a mistake

16 **The sum of the first 5 terms of an arithmetic series with first term 2 and common difference 3 is**

ANSWER _____

Understand It with Pulse | Flag a mistake

17 **The inverse of the function f(x) = 3x + 7 is**

A $f^{-1}(x) = x - 7/3$

B $f^{-1}(x) = x + 7/3$

C $f^{-1}(x) = 3x - 7$

D $f^{-1}(x) = x/3 + 7$

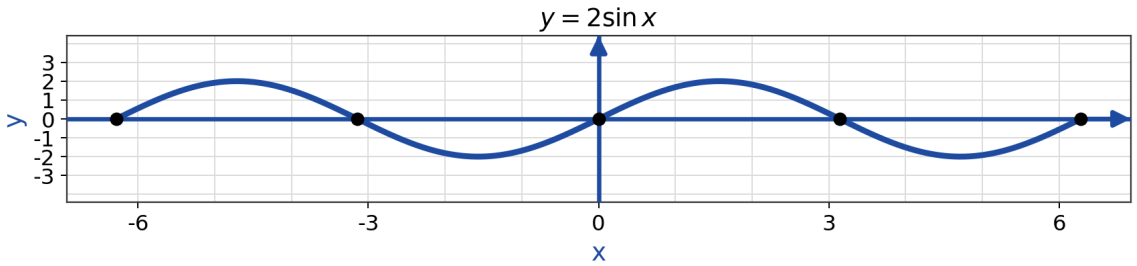
Understand It with Pulse | Flag a mistake

18 **The equation $10^x = 10000$ is solved by x =**

ANSWER _____

Understand It with Pulse | Flag a mistake

19 **The graph shows a sine function. Its amplitude is Figure 2**



A 3

B 4

C 2

D 1

Understand It with Pulse | Flag a mistake

20 **The sum of the first 4 terms of a geometric series with first term 3 and common ratio 2 is**

ANSWER _____

Understand It with Pulse | Flag a mistake

21 **The graph of y = 3 f(x) + 1 is the graph of y = f(x) stretched vertically by a factor of**

A 4

B 3

C 1

D 14

Understand It with Pulse | Flag a mistake

22 **A population starts at 1000 and doubles 3 times. The final population is**

A 8000

B 6000

C 4000

D 16000

Understand It with Pulse | Flag a mistake

23 **An angle of 360° in radians is**

- A π/3
- B 2π/3
- C 2π
- D 3π/2

Understand It with Pulse | Flag a mistake

24 **An arithmetic sequence has first term 15 and common difference -2 Its fifth term is**

- A 9
- B 5
- C 7
- D 18

Understand It with Pulse | Flag a mistake

25 The function f(x) = 1/x - 2 has a vertical asymptote at

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

Understand It with Pulse | Flag a mistake

26 The horizontal asymptote of $y = 3^x + 2$ is

- A y = 2
- B y = 0
- C y = 1
- D x = 2

Understand It with Pulse | Flag a mistake

27 **The exact value of cos 60° is**

A $\frac{1}{2}$

B $\sqrt{3}/2$

C $\sqrt{2}/2$

D 1

Understand It with Pulse | Flag a mistake

28 **A geometric sequence has first term 64 and each term is divided by 4 to get the next term. Its third term is**

A 16

B 1

C 4

D 8

Understand It with Pulse | Flag a mistake

29 **The function f(x) = 1/(x - 4) has a vertical asymptote at x =**

ANSWER _____

Understand It with Pulse | Flag a mistake

30 **The graph of $y = 2^x + 1$ has a horizontal asymptote at y =**

ANSWER _____

Understand It with Pulse | Flag a mistake

31 **An angle of 90° in radians is**

A 1π/2

B π

C π/2

D 2π

Understand It with Pulse | Flag a mistake

32 **A sequence is defined by $t_1 = 2$ and $t_n = t_{n-1} + 6$ The third term is**

- A 8
- B 20
- C 15
- D 14

Understand It with Pulse | Flag a mistake

33 **The function f(x) = |x| reflected in the x axis and shifted up 4 units has equation**

- A $y = |x| + 4$
- B $y = -|x| + 4$
- C $y = -|x| - 4$
- D $y = |x| - 4$

Understand It with Pulse | Flag a mistake

34 The y intercept of $y = 3(3^x)$ is

- A 4
- B 9
- C 3
- D 0

Understand It with Pulse | Flag a mistake

35 The period, in degrees, of y = sin x is

- A 420
- B 360
- C 180
- D 371

Understand It with Pulse | Flag a mistake

36 A sequence is defined by $t_1 = 5$ and $t_n = 3\,t_{n-1}$ The third term is

- A 45
- B 15
- C 135
- D 46

Understand It with Pulse | Flag a mistake

37 A function is defined by f(x) = 2x + 3 for all real x. The value of f(4) is

- A 11
- B 12
- C 10
- D 13

Understand It with Pulse | Flag a mistake

38 **An investment of 1000 dollars grows by a factor of 1.1 each year. Its value after 3 years, to the nearest dollar, is**

A 1431

B 1231

C 1331

D 1300

Understand It with Pulse | Flag a mistake

39 **The reference angle for 330° in degrees, is**

A 60

B 40

C 90

D 30

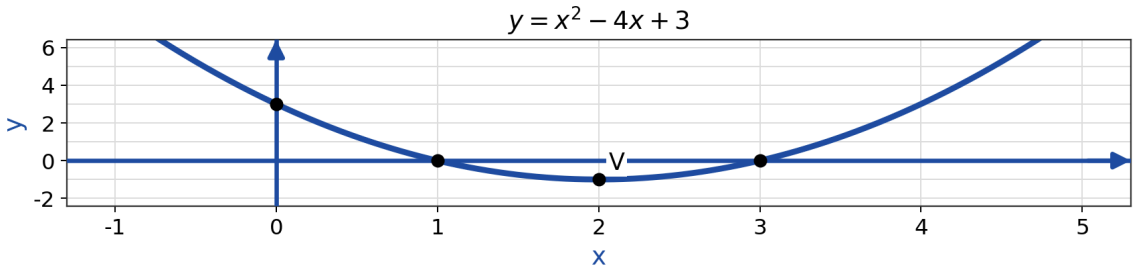
Understand It with Pulse | Flag a mistake

40 **The sum of the entries in row 4 of Pascal triangle is**

- **A** 8
- **B** 27
- **C** 16
- **D** 18

Understand It with Pulse | Flag a mistake

41 **The graph shows a parabola with its vertex marked V. The coordinates of V are Figure 1**



- **A** (-2, -1)
- **B** (2, -1)
- **C** (2, 1)
- **D** (3, -1)

Understand It with Pulse | Flag a mistake

42 **A substance has a half life of 4 years. Starting with 640 grams, the amount remaining after 8 years, in grams, is**

- A 320
- B 80
- C 160
- D 240

Understand It with Pulse | Flag a mistake

43 **The phase shift, in degrees, of y = sin(x - 60°) is**

- A 60
- B 90
- C 45
- D 0

Understand It with Pulse | Flag a mistake

44 For the sequence defined by $t_n = 2n^2$ the second finite difference is

A 2

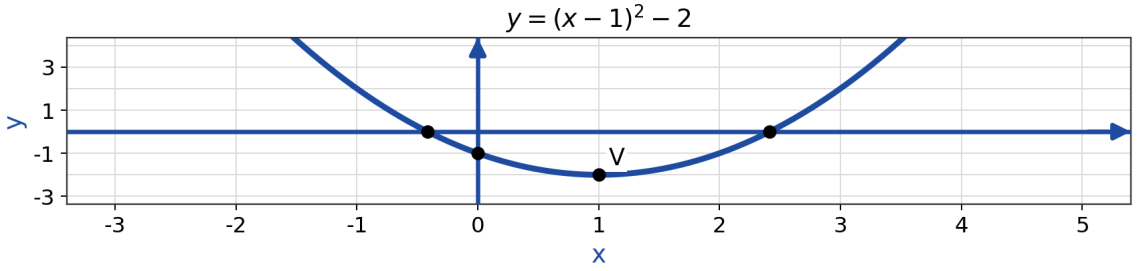
B 8

C 4

D 6

Understand It with Pulse | Flag a mistake

45 The graph shows a parabola with its vertex marked V. The coordinates of V are Figure 4



A (-1, -2)

B (1, -2)

C (1, 2)

D (2, -2)

Understand It with Pulse | Flag a mistake

46 **A substance has a half life of 6 years. Starting with 640 grams, the amount remaining after 12 years, in grams, is**

- A 320
- B 80
- C 240
- D 160

Understand It with Pulse | Flag a mistake

47 **The phase shift, in degrees, of y = sin(x - 90°) is**

- A 120
- B 75
- C 0
- D 90

Understand It with Pulse | Flag a mistake

48 For the sequence defined by $t_n = n^2$ the second finite difference is

- A 2
- B 1
- C 4
- D 13

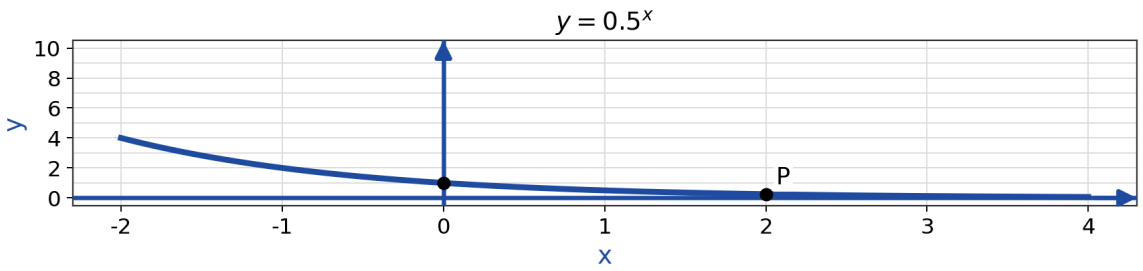
Understand It with Pulse | Flag a mistake

49 The minimum or maximum value of $y = 4(x - 1)^2 + -2$ is

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

Understand It with Pulse | Flag a mistake

50 **The graph shows an exponential function. The value of the function at the marked point is Figure 3**



A 0.5

B 0.25

C 0.12

D 1.25

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Flag a mistake

ANSWER KEY

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

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