ALBERTA MATH 30-2 · UNIT 7 · 25 QUESTIONS

Sinusoidal Functions — 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 amplitude of the function y = 5sin(2(x - 30°)) + 3 is**

- A 2
- B 5
- C 30
- D 3

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2 **The period of the function y = sin(3x) is**

- A 360°
- B 180°
- C 120°
- D 90°

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3 **The graph below shows a sinusoidal function. The equation of the axis of the function is**

- **A** y = 14
- **B** y = 4
- **C** y = 3
- **D** y = 7

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4 **The maximum value of the function y = 2cos x - 4 is**

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

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5 **The range of the function $y = 3\sin x + 1$ is**

- **A** $-3 \leq y \leq 3$
- **B** $-2 \leq y \leq 4$
- **C** $-4 \leq y \leq 2$
- **D** $-2 \leq y \leq 2$

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6 **A sine function has an amplitude of 3, a period of 180°, an equation of the axis of $y = 2$, and no phase shift. Its equation is**

- **A** $y = 3\sin(2x) + 2$
- **B** $y = 3\sin(180x) + 2$
- **C** $y = 2\sin(3x) + 3$
- **D** $y = 3\sin(\frac{x}{2}) + 2$

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7 **The graph below shows a sinusoidal function. The amplitude and equation of the axis are**

- **A** Amplitude: 8 Axis: y = 2
- **B** Amplitude: 4 Axis: y = 4
- **C** Amplitude: 4 Axis: y = 2
- **D** Amplitude: 8 Axis: y = 4

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8 **The phase shift of the function y = 2sin(3(x - 20°)) + 1 is**

- **A** 20° to the left
- **B** 60° to the right
- **C** 60° to the left
- **D** 20° to the right

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9 **A sinusoidal function has a period of 45°. The value of b in the equation y = asin(bx) + d is ____ Record your answer as an integer.**

ANSWER _____

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10 **The value of y = 4cos(2x) - 1 when x = 60° is**

A 1

B 3

C -3

D -1

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11 **A Ferris wheel with a diameter of 20 m has its lowest point 1 m above the ground. A rider boards at the lowest point, and the wheel completes one revolution in 8 minutes. The height of the rider, h(t), after t minutes is modelled by**

- **A** h(t) = -10cos(45t) + 11
- **B** h(t) = 10cos(45t) + 11
- **C** h(t) = -10cos(8t) + 11
- **D** h(t) = -10cos(45t) + 21

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12 **A Ferris wheel has a diameter of 24 m and its lowest point is 2 m above the ground. The wheel completes one revolution in 6 minutes, and a rider boards at the lowest point. The height of the rider, in metres, after 1.5 minutes is ____ Record your answer to the nearest tenth.**

ANSWER _____

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13 **The graph below shows the depth of water at a dock, in metres, over time, in hours. The period of the function is**

A 3 h

B 12 h

C 6 h

D 24 h

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14 **At a harbour, the maximum depth of water is 9.6 m and the minimum depth is 3.2 m. The amplitude of the depth function, in metres, to the nearest tenth, is ____ Record your answer to the nearest tenth.**

ANSWER _____

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15 The number of hours of daylight in a town is modelled by D(t) = 4.5sin(b(t - 80)) + 12, where t is the day of the year. The maximum number of hours of daylight is

A 4.5

B 7.5

C 12

D 16.5

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16 The graph below shows a sinusoidal function. The value of b in y = asin(bx) + d, to the nearest tenth, is ____ Record your answer to the nearest tenth.

ANSWER _____

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17 **The temperature in a greenhouse, t hours after midnight, is modelled by T(t) = 6sin(15(t - 9)) + 14. The temperature first reaches its maximum at**

- A 3:00 p.m.
- B 9:00 a.m.
- C 6:00 p.m.
- D 12:00 p.m.

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18 **A buoy bobs up and down on the waves. Its height, in metres, relative to calm water is modelled by h(t) = 0.8sin(40t), where t is in seconds. The number of complete cycles the buoy makes in 45 seconds is**

- A 4
- B 9
- C 5
- D 8

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19 **A sinusoidal function has a maximum value of 15 and an equation of the axis of y = 4. Its minimum value is ____ Record your answer as an integer.**

ANSWER _____

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20 **The graph below shows a sinusoidal function. An equation of the graph is**

A y = 6sin(4x) + 1

B y = 6cos(4x) + 1

C y = -6cos(4x) + 1

D y = 6cos(90x) + 1

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21 **For the function y = 3sin(2(x - 45°)) + 5, the period and phase shift are**

A Period: 90° Phase shift: 45° to the right

B Period: 180° Phase shift: 45° to the left

C Period: 360° Phase shift: 45° to the right

D Period: 180° Phase shift: 45° to the right

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22 **The graph below shows a sinusoidal function of the form y = acos(bx) + d. The value of a + b + d, to the nearest tenth, is ____ Record your answer to the nearest tenth.**

ANSWER _____

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23 The depth of water in a harbour, t hours after midnight, is modelled by D(t) = 2.5sin(30(t - 3)) + 6.5. The depth, in metres, to the nearest tenth, at t = 5 is

- A 8.7
- B 6.5
- C 4.3
- D 9.0

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24 The average monthly temperature in a prairie city is modelled by T(m) = 18sin(30(m - 4)) + 7, where m is the month number (1 = January). The average temperature is lowest in the month of

- A April
- B July
- C January
- D October

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25 **A point on a rotating ride has a height, in metres, modelled by h(t) = 9sin(36t) + 13, where t is in seconds. The height of the point after 7.5 seconds, to the nearest tenth, is ____ Record your answer to the nearest tenth.**

ANSWER _____

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ANSWER KEY

1. B
2. C
3. D
4. A
5. B
6. A
7. C
8. D
9. 8
10. C
11. A
12. 14
13. B
14. 3.2
15. D
16. 1.5
17. A
18. C
19. -7
20. B
21. D
22. 27.2
23. A
24. C
25. 4

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