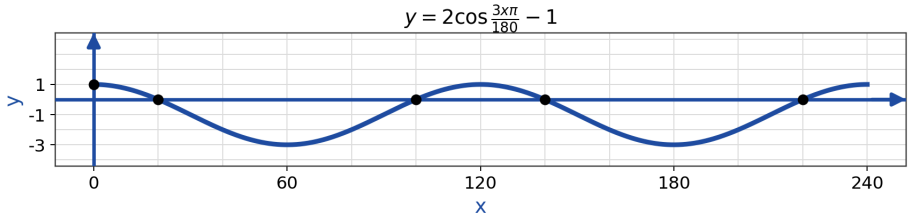
NUNAVUT MATH 30-2 · UNIT 7 · 10 QUESTIONS

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 graph below shows a sinusoidal function. An equation that models the graph is**



- **A** y = 2sin(3x) - 1
- **B** y = 2cos(3x) - 1
- **C** y = 2cos(120x) - 1
- **D** y = -2cos(3x) - 1

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2 **The height of a seat on a rotating swing ride, in metres, is modelled by h(t) = -8cos(36t) + 9.5, where t is in seconds. The height of the seat after 5 seconds, to the nearest tenth, is ____ Record your answer to the nearest tenth.**

ANSWER _____

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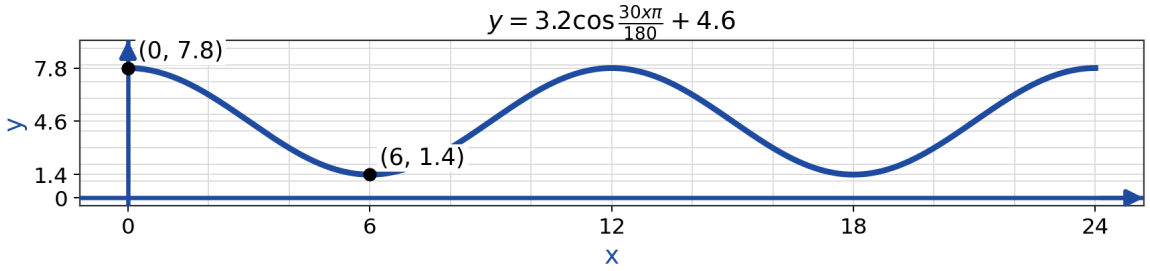
3 **The graph below shows the depth of water at a pier, in metres, over time, in hours. An equation for the depth, d(t), is**



A d(t) = 3.2sin(30t) + 4.6

B d(t) = 4.6cos(30t) + 3.2

C d(t) = 3.2cos(12t) + 4.6

D d(t) = 3.2cos(30t) + 4.6

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4 **For the function y = 4sin(2(x + 15°)) - 3, the phase shift and the equation of the axis are**

- **A** Phase shift: 15° to the right Axis: y = -3
- **B** Phase shift: 30° to the left Axis: y = 3
- **C** Phase shift: 15° to the left Axis: y = -3
- **D** Phase shift: 15° to the left Axis: y = 3

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5 **The hours of daylight in a city are modelled by H(t) = 6.1sin(b(t - 79)) + 11.9, where t is the day of the year and the period is 365 days. To the nearest hundredth, the value of b is**

- **A** 0.99
- **B** 1.00
- **C** 1.97
- **D** 0.49

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6 **The temperature in a greenhouse, t hours after noon, is modelled by T(t) = 7cos(15t) + 20. The temperature, in degrees Celsius, to the nearest tenth, at 4:00 p.m. is ____ Record your answer to the nearest tenth.**

ANSWER _____

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7 **A piston in an engine moves up and down. Its height reaches a maximum of 14 cm at t = 3 s and the next minimum of 2 cm at t = 9 s. The period of the motion is**

A 6 s

B 12 s

C 24 s

D 3 s

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8 **The graph of y = asin(b(x - c)) + d has a period of 240° and a phase shift of 30° to the right. The values of b and c are**

A b = 240 c = 30°

B b = 1.5 c = -30°

C b = 2.4 c = 30°

D b = 1.5 c = 30°

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9 **The height of a load on a hoist, in metres, is modelled by h(t) = 6sin(30t) + 10, where t is in seconds. The smallest positive value of t for which the height is a maximum is ____ Record your answer as an integer.**

ANSWER _____

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10 **A wind turbine has blades 12 m long. The hub of the turbine is 15 m above the ground, and a point at the tip of a blade starts at the top. The turbine completes one rotation in 6 seconds. The height of the point, h(t), after t seconds is modelled by**

- **A** h(t) = -12cos(60t) + 15
- **B** h(t) = 12sin(60t) + 15
- **C** h(t) = 12cos(60t) + 15
- **D** h(t) = 24cos(60t) + 15

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ANSWER KEY

1. B
2. 17.5
3. D
4. C
5. A
6. 23.5
7. B
8. D
9. 3
10. C

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