

f r q

$$d = 7$$

$$h(t) = 13 \cos(\pi(t + 1)) + 7$$

OR

$$a = -13$$

$$\frac{2\pi}{b} = 2, \text{ so } b = \pi$$

$$c = 0$$

$$d = 7$$

$$h(t) = -13 \cos(\pi t) + 7$$

Note: Based on horizontal shifts and reflections, there are other correct forms for $h(t)$.

Part C

Select a point value to view scoring criteria, solutions, and/or examples to score the response.



0	1	2
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The student response includes both of these criteria.

- Correct function behavior in (i)
- Correct change in rate of change in (ii)

Model Solution

(i) Choice a.

(ii) Because the graph of h is concave down on the interval (t_1, t_2) , the rate of change of h is decreasing on the interval (t_1, t_2) .

Directions:

- Unless otherwise specified, the domain of a function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number. Angle measures for trigonometric functions are assumed to be in radians.
- Solutions to equations must be real numbers. Determine the exact value of any expression that can be obtained without a calculator. For example, $\log_2 8$, $\cos\left(\frac{\pi}{2}\right)$, and $\sin^{-1}(1)$ can be evaluated without a calculator.
- Unless otherwise specified, combine terms using algebraic methods and rules for exponents and logarithms, where applicable. For example, $2x + 3x$, $5^2 \cdot 5^3$, $\frac{x^5}{x^2}$, and $\ln 3 + \ln 5$ should be rewritten in equivalent forms.
- For each part of the question, show the work that leads to your answers.