

Precalculus · Graphs of Trigonometric Functions · Test

Common Core F-TF.B.5, F-IF.C.7e, F-BF.B.3 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This precalculus trig graphs test checks graphs of trigonometric functions in 45 minutes, with 9 questions for a total of 20 points.

This test covers amplitude, period, phase shift, midline, tangent graphs, and sinusoidal models. It has 9 questions worth 20 points and should take about 45 minutes. Calculators are allowed. Give exact answers in terms of π unless told otherwise.

Test information

- **Grade:** Precalculus
- **Chapter:** Graphs of Trigonometric Functions
- **Common Core:** F-TF.B.5, F-IF.C.7e, F-BF.B.3
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 3 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 1 pt)

Precalculus Trig Graphs Test: questions 1-5

Question 1: Features of a cosine (2 points)

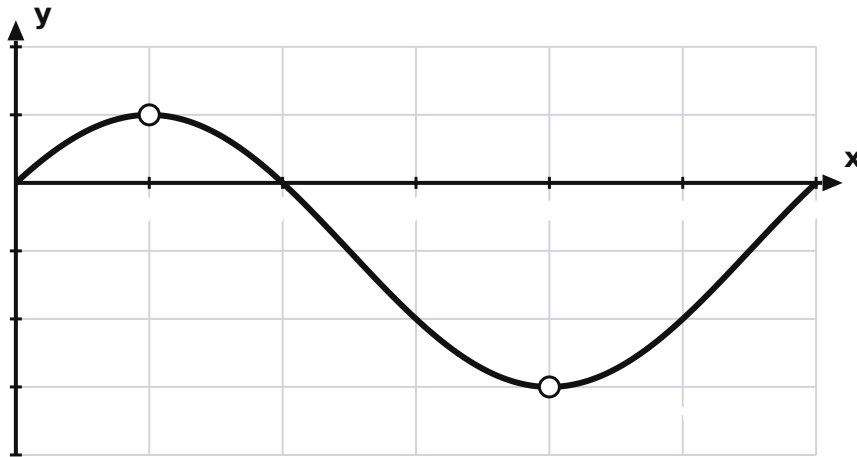
- For $y = -4\cos\left(\frac{x}{3}\right) + 2$, state the amplitude and the period. (1 point)
- State the midline, the maximum value, and the minimum value. (1 point)

Question 2: Phase shift (2 points)

- For $y = 2\sin(3x - \pi)$, state the period and the phase shift. (1 point)
- Find the value of the function at $x = \frac{\pi}{2}$. (1 point)

Question 3: Equation from a graph (3 points)

The graph shows a cosine function.

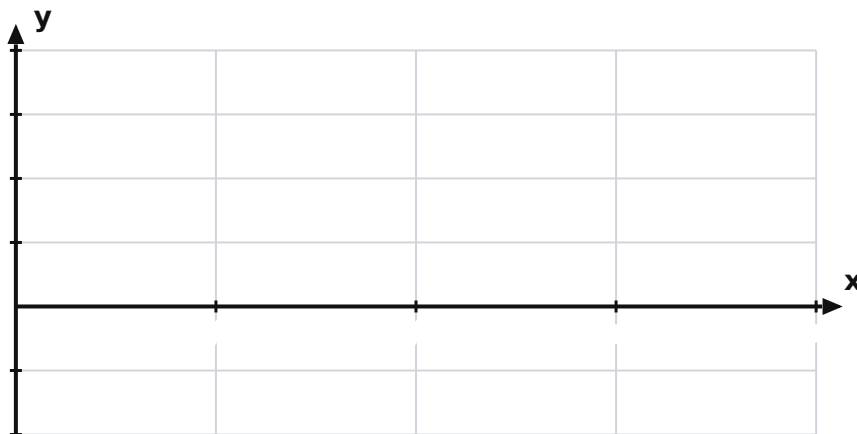


Cosine-shaped curve with a marked maximum and minimum.

- State the amplitude and the midline. (1 point)
- State the period. (1 point)
- Write an equation of the form $y = A\cos(B(x-C)) + D$. (1 point)

Question 4: Sketch a sinusoid (2 points)

Sketch the graph of $y = -2\sin 2x + 1$ for $0 \leq x \leq \pi$ on the grid.



Blank grid.

Question 5: Tangent features (3 points)

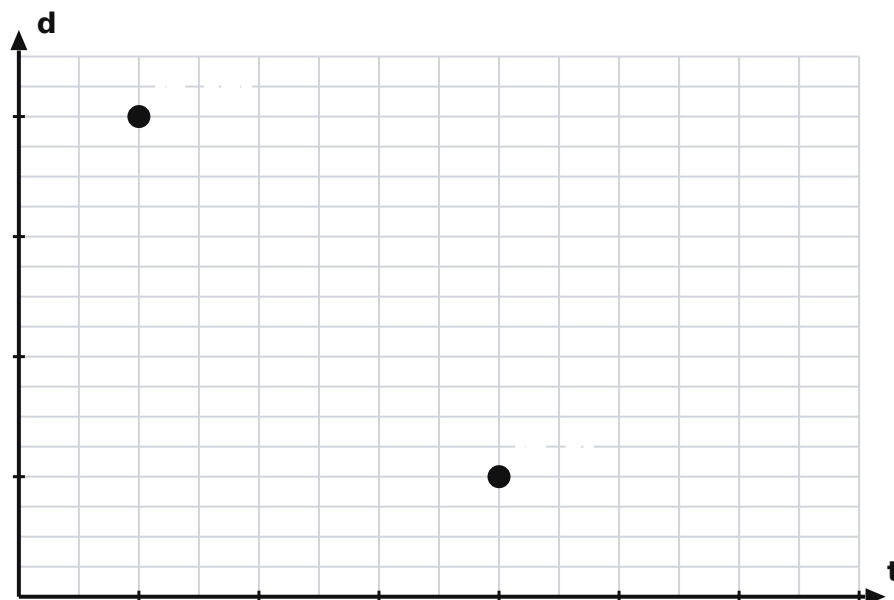
Let $y = 3\tan 2x$.

- Find the period. (1 point)
- Find the two asymptotes closest to the y-axis. (1 point)
- Find the value at $x = \frac{\pi}{8}$. (1 point)

Precalculus Trig Graphs Test: questions 6-9

Question 6: Water depth model (3 points)

The graph shows the depth d , in feet, of water at a dock. The depth is a sinusoid with high point $(2,16)$ and low point $(8,4)$.



Water depth readings.

- Find A and D . (1 point)
- Write $d(t)$ as a cosine function. (1 point)
- Find the depth at $t=5$. (1 point)

Question 7: Transformations (2 points)

Describe the transformations that take the graph of $y = \sin x$ to the graph of $y = -\frac{1}{2}\sin\left(x + \frac{\pi}{4}\right) + 3$.

Question 8: Daily temperature (2 points)

In Phoenix the temperature peaks at 104°F at 3 p.m. ($t=15$) and is lowest at 80°F at 3 a.m. ($t=3$). Write a cosine model $T(t)$ and find the temperature at 9 a.m. (2 points)

Question 9: No amplitude (1 point)

Explain why the graph of $y = \tan x$ has no amplitude. (1 point)

How to use this precalculus trig graphs test

Take this precalculus trig graphs test without notes, then grade it with the test answer key out

of 20 points.

