

Review 1

Name _____

1 Graph each function, finding the requested information.

$y = \sin x$

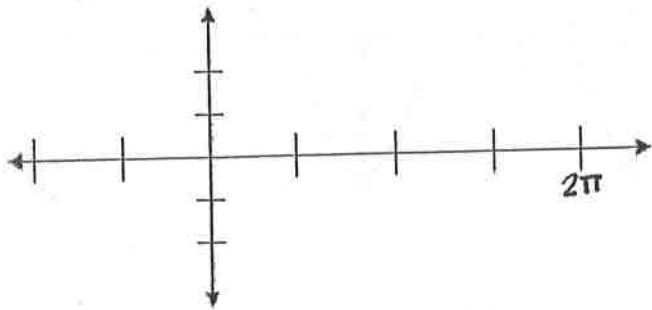
Domain _____

Range _____

Period _____

x-ints _____

y-int _____



b) $y = \cos x$

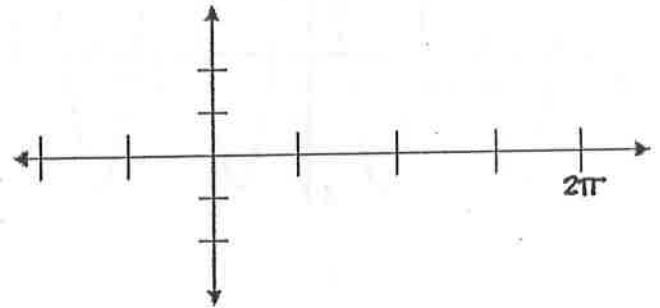
Domain _____

Range _____

Period _____

x-ints _____

y-int _____



c) $y = \tan x$

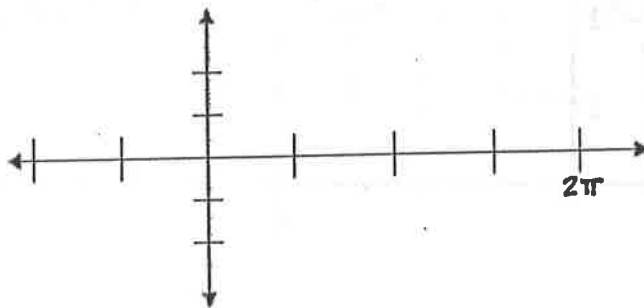
Domain _____

Range _____

Period _____

x-ints _____

y-int _____



2 Write an equation of a cosine function with amplitude 3, a period of π , a phase shift of $\frac{\pi}{4}$

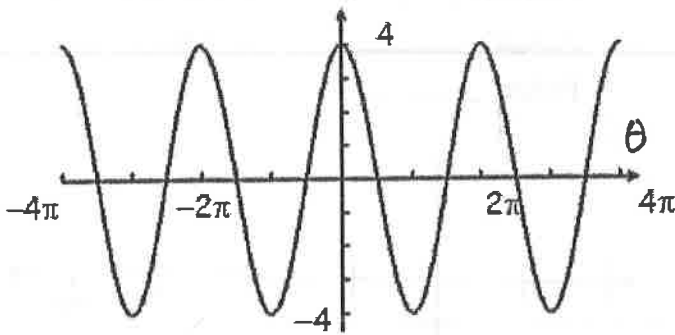
a) to the left, and translated 1 unit up.

b) Write an equation of a sine graph with a phase shift right 3, a period of 5π , a vertical translation down 6, and an amplitude of 3.

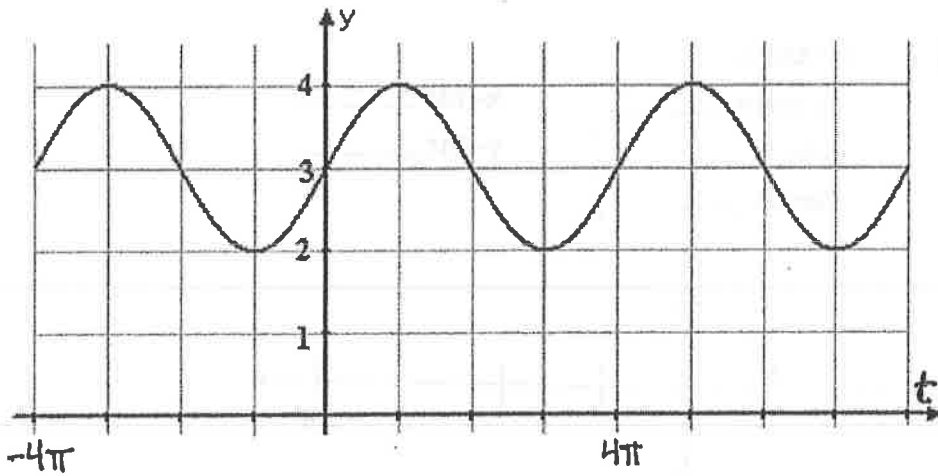
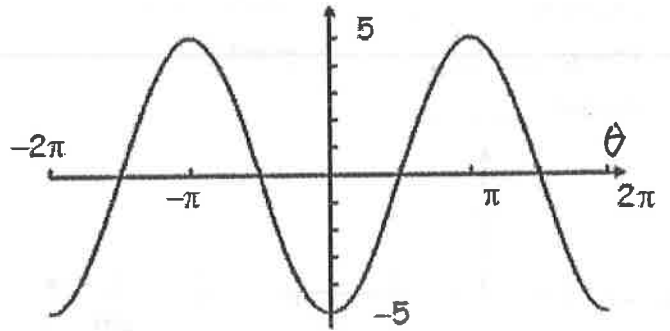
3

Given the graph, find the amplitude and period, then write a trig function.

a)



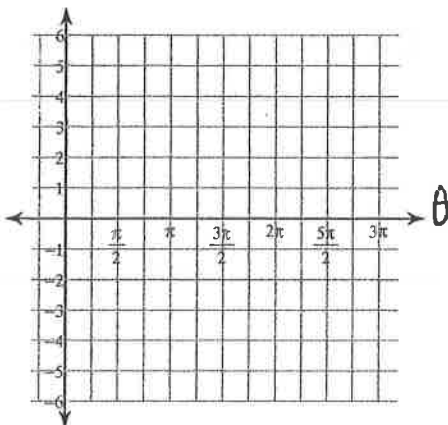
b)



4

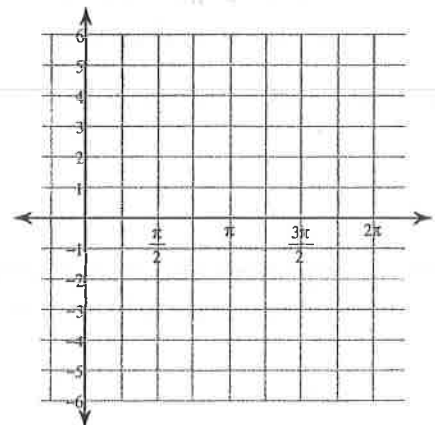
Graph $y = 2 \sin(\theta) + 3$

(A)



Graph $y = 2 \cos(2\theta) - 2$

(B)



5

A portion of a roller coaster track is to be built in the shape of a sinusoid. You have been hired to calculate the lengths of the vertical timber supports to be used. The high and low points on the track are separated by 50 meters horizontally and by 30 meters vertically. The low point is 3 meters below the ground.

a) Write an equation that models this roller coaster.

$y =$ _____

b) After 150 meters how high will the roller coaster be? Explain or show work to justify your answer.

c) How high will the supports have to be after 35.5 meters?

Textbook Questions
do on Separate Paper

7

146, 148, 150a, 170

↑ practice for exact values of sine, cosine, and tangent

WARM UP

Tidal Wave Problem

A tsunami (commonly called a "tidal wave" because its effect is like a rapid change in tide) is a fast-moving ocean wave caused by an underwater earthquake. The water first goes down from its normal level, then rises an equal distance above its normal level and finally returns to its normal level. The period is about 15 minutes.

Suppose that a tsunami with an amplitude of 10 meters approaches the pier at Honolulu where the normal depth of the water is 9 meters.

a) Sketch and label the graph of the wave.

b) Assuming that the depth of the water varies sinusoidally with time as the tsunami passes, predict the depth of the water at the following times after the tsunami first reaches the pier.

i.	2 minutes.	ii.	4 minutes.	iii.	12 minutes.
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c) According to your model, what will the *minimum* depth of the water be? How do you interpret this answer in terms of what will happen in the real world?

d) The "wavelength" of a wave is the distance a crest of the wave travels in one period. It is also equal to the distance between two adjacent crests. If a tsunami travels at 1200 kilometers per hour, what is its wavelength?

