

Lesson 6: Graphing Tangent

Question #1

Reference Q.12453

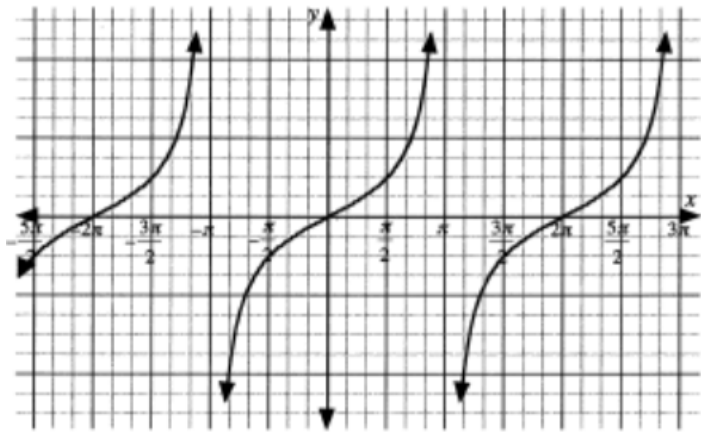
Write the equation of a tangent function with the given period.

- a. period 45°
- b. period $\frac{4\pi}{3}$

Question #2

Reference Q.12462

The graph shown has equation $y = \tan bx$.

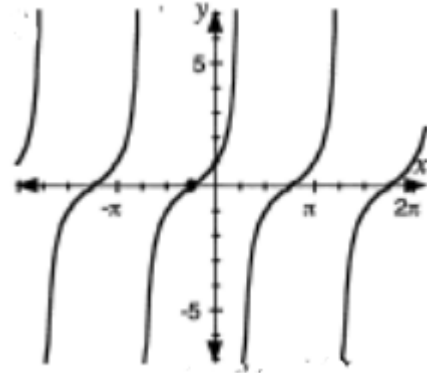


The value of b , to the nearest tenth, is ____.

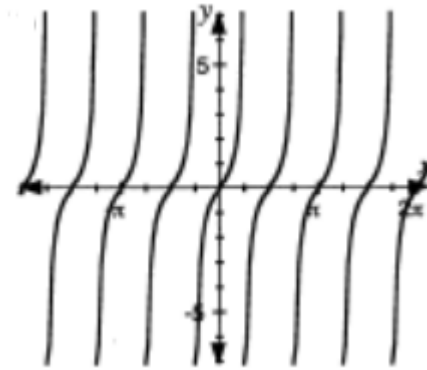
Question #3

Reference Q.12468

Determine the equation of each graph in the form $y = \tan b(x - c)$.



a.



b.

Question #4

Reference Q.12471

Which equation is a tangent function with period $\frac{\pi}{3}$, and a vertical displacement -3 ?

- A. $y = \tan \frac{\pi}{3}x - 3$
- B. $y = \tan 3(x - 3)$
- C. $y = \tan 3x - 3$
- D. $y = \tan 6x - 3$

Question #5

Reference Q.12449

State the period in degrees.

- a. $y = 6 \sin x$
- b. $y = \frac{2}{3} \cos \frac{x}{7}$

Question #6

Reference Q.12450

State the period in radians.

a. $y = \cos 3x$

b. $y = \frac{1}{4} \sin \frac{x}{3}$

Question #7

Reference Q.12431

- a. Complete the following table of values for domain $0^\circ \leq x \leq 180^\circ$. Give your answers to two decimal places where necessary.

x	0°	15°	30°	45°	60°	75°	90°
$y = \tan x$							
x	105°	120°	135°	150°	165°	180°	
$y = \tan x$							

- b. Plot the points. Do not join the points.
c. To investigate what happens to the graph of $y = \tan x$ as x approaches 90° , complete the following table.

x	80°	85°	89°	89.9°	89.99°	89.999°
$y = \tan x$						
x	100°	95°	91°	90.1°	90.01°	90.001°
$y = \tan x$						

- d. To graph $y = \tan x$ on your calculator using degree mode, use the following instructions:

Step 1: Enter $y = \tan x$ using the $\boxed{Y=}$ key.

Step 2: Press the $\boxed{\text{Zoom}}$ key.

Step 3: Access "ZTrig" and press $\boxed{\text{Enter}}$.

- e. Write down the graphing calculator window format for "ZTrig".
f. On the grid in b) complete the graph of $y = \tan x$ for domain $-360^\circ \leq x \leq 360^\circ$.
g. Is $y = \tan x$ a periodic function? If so, what is the period?
h. Does the concept of amplitude apply to the graph of $y = \tan x$?

Question #8

Reference Q.12432

State the following for the function $y = \tan x, 0^\circ \leq x \leq 360^\circ$.

- a. Domain _____
b. Range _____
c. Period _____
d. x -intercept(s) _____
e. y -intercept(s) _____
f. Equations of vertical asymptotes _____

Question #9

Reference Q.12433

Consider the function $f(x) = \tan x, x \in R$.

The domain of the function is

- A. $x \neq n\pi, n \in I$
B. $x \neq \frac{n\pi}{2}, n \in I$
C. $x \neq \frac{\pi}{2} + n\pi, n \in I$
D. $x \in R$

Question #10

Reference Q.12434

Consider the function $f(x) = \tan x, x \in R$.

The asymptotes of the graph of the function are

- A. $x = n\pi, n \in I$
B. $x = \frac{n\pi}{2}, n \in I$
C. $x = \frac{\pi}{2} + n\pi, n \in I$
D. $x = 2n\pi, n \in I$

Question #11

Reference Q.12435

Consider the function $f(x) = \tan x, x \in R$.

The range of the function is

- A. $x \neq \frac{\pi}{2} + n\pi, n \in I$
B. $x \in R$
C. $f(x) \neq \frac{\pi}{2} + n\pi, n \in I$
D. $f(x) \in R$

Question #12

Reference Q.12486

Consider the function $f(x) = \tan x$, $x \in \mathbf{R}$.

The zeros of the function are

- A. $x = n\pi$, $n \in \mathbf{I}$
- B. $x = \frac{n\pi}{2}$, $n \in \mathbf{I}$
- C. $x = \frac{\pi}{2} + n\pi$, $n \in \mathbf{I}$
- D. $x = 2n\pi$, $n \in \mathbf{I}$

Question #13

Reference Q.12487

Which of the following statements is incorrect?

- A. The graph of $y = \sin x$ has an x -intercept of π .
- B. The graph of $y = \cos x$ has a minimum value when $x = \pi$.
- C. The graph of $y = \tan x$ has an x -intercept of π .
- D. The graph of $y = \cos x$ has an x -intercept of π .

Question #14

Reference Q.12460

Which of the following functions does not have a period of π ?

- A. $y = \sin 2x$
- B. $y = \cos 2x$
- C. $y = \tan 2x$
- D. $y = \tan x$

Question #15

Reference Q.12461

Which of the following statements is incorrect?

- A. The maximum value of the graph of $y = 3 \cos 2x$ is 3.
- B. The graph of $y = 3 \sin 2x$ has a y-intercept of 3.
- C. The graph of $y = 4 \cos 3x$ has an x-intercept of $\frac{\pi}{6}$.
- D. The graph of $y = 2 \tan 2x$ has an asymptote with equation $x = \frac{\pi}{4}$.

Lesson 7: Graphing Inverse Trigonometric Functions

Question #1

Reference Q.17781

Given that the general transformations of $f(x) = \arcsin(x)$ is $g(x) = a \arcsin(b(x - c)) + d$, how does each of the following affect the graph?

- a-value
- b-value
- c-value
- d-value

Question #2

Reference Q.17782

Describe in words how the graph of $g(x) = -2 \arccos(3(x + 1)) - 2$ compares to the parent function $f(x) = \arccos x$.

Question #3

Reference Q.17783

Describe in words how the graph of $y = \frac{1}{2} \tan^{-1}\left(\frac{2}{5}(x - 1)\right) + 7$ compares to its parent function.

Question #4

Reference Q.17784

Which of the following is not true about $g(x) = \arcsin(-4(x - 2)) - 5$?

- Horizontally Stretched by a factor of $\frac{1}{4}$
- Vertically Stretched by a factor of $\frac{1}{4}$
- Reflected in the y-axis
- Horizontally translated 2 units to the right

Question #5

Reference Q.17785

What is the equation given that $y = \arctan x$ is transformed according to the following properties:

- Reflected in the x-axis
- Horizontally translated 2 units to the right
- Vertically translated 1 unit down
- Horizontally stretched by a factor of $\frac{1}{2}$

Question #6

Reference Q.17786

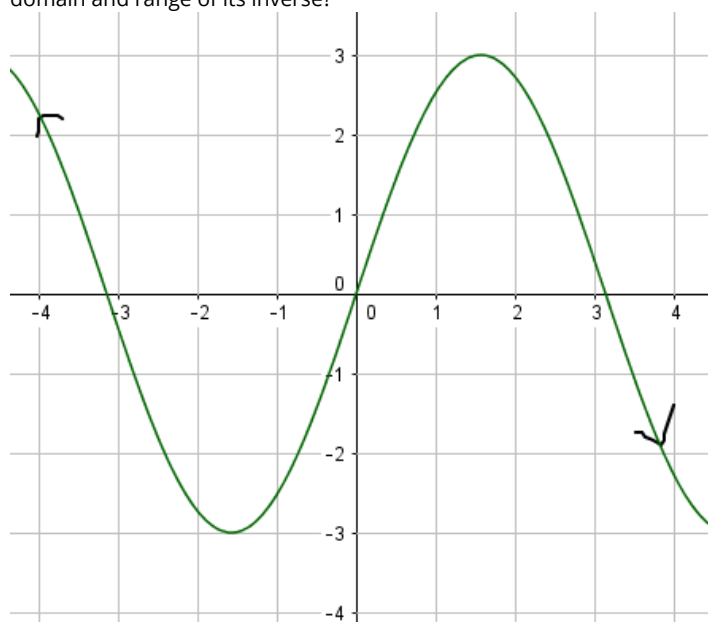
What is the equation given that $y = \sin^{-1} x$ is transformed according to the following properties:

- Reflected in the y-axis
- Vertically stretched by a factor of $\frac{1}{2}$
- Vertically translated 1 unit down
- Horizontally stretched by a factor of $\frac{2}{7}$

Question #7

Reference Q.17787

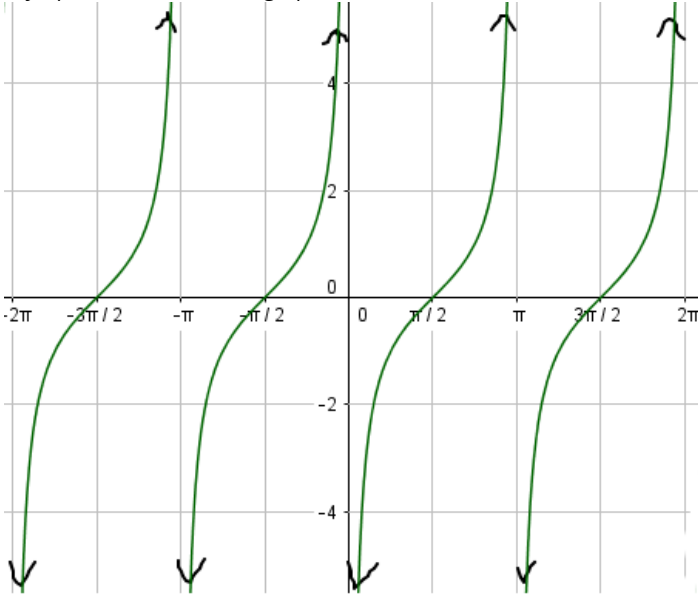
Given the graph of a transformed sine function below, what would the domain and range of its inverse be?



Question #8

Reference Q.17788

Given the graph below, what would be the equations of the asymptotes in the inverse graph?



Question #9

Reference Q.17789

If the period of $f(x) = \tan x$ is π , what is the period of $y = \arctan x$?

Question #10

Reference Q.17790

- a. Using transformations, sketch a graph of $f(x) = 2 \arccos(x - 2) + 1$.

x	y
-1	π
0	$\frac{\pi}{2}$
1	0

b. What is the domain and range $f(x)$?

Question #11

Reference Q.17791

- a. Using transformations, sketch a graph of $f(x) = -\arcsin\left(\frac{1}{2}(x + 1)\right) - 3$.
- b. What is the domain and range $f(x)$?

Question #12

Reference Q.17792

- a. Using transformations, sketch a graph of $f(x) = \frac{1}{2} \arctan(x + 3) - 2$.
- b. What is the domain and range $f(x)$?

Question #13

Reference Q.17793

- a. Using transformations, sketch a graph of $f(x) = \arccos\left(\frac{2}{3}(x + 4)\right)$.
- b. What is the domain and range $f(x)$?

Question #14

Reference Q.17794

- a. Using transformations, sketch a graph of $f(x) = 3 \arcsin(-(x - 2))$.
- b. What is the domain and range $f(x)$?

Question #15

Reference Q.17795

- a. Using transformations, sketch a graph of $f(x) = -3 \arctan(x) + 1$.
- b. What is the domain and range $f(x)$?

Question #16

Reference Q.17796

Where are the **exact** locations of the asymptotes in the function $f(x) = \frac{3}{4} \arctan(2(x - 5)) - 2$.

Question #17

Reference Q.17797

Where are the **exact** locations of the asymptotes in the function $f(x) = -4 \arctan\left(\frac{5}{2}x\right) + 1$.

Question #18

Reference Q.17798

- What is the equation of the inverse of $y = -2 \sin\left(\frac{1}{4}x\right) + 3$?
- Compare the transformations being applied in the original sine function and its inverse. What do you notice?

Question #19

Reference Q.17799

Without graphing or solving for the inverse equation, list the transformations of the inverse of $y = 5 \cos(-(x + 3)) + 2$.

Question #20

Reference Q.17800

Given the sine graph below, what is the domain and range of the inverse graph (without restricting it to become a function)?

