Description

Exam #1: Please work as many problems as possible showing ALL work! Even if you have to write your thought process in English, please do NOT simply state the answers.

1. Question Details SPreCalc6 1.1.005.MI. [2684203]

List the elements of the given set that are natural numbers, integers, rational numbers, and irrational numbers. (Enter your answers as comma-separated lists.)

$$\left\{0, -15, 20, 25, 1, \frac{22}{7}, 0.538, \sqrt{8}, \pi, -\frac{1}{3}, \sqrt[3]{2}\right\}$$

(a) natural numbers

(b) integers

(c) rational numbers

(d) irrational numbers

2. Question Details SPreCalc6 1.1.044.MI. [1615695]

Find the indicated set if given the following.

$A = \{x | x \geq -8\}$ $B = \{x | x < 5\}$ $C = \{x | -1 < x \leq 6\}$

(a) $A \cap C$

- $\{x | -8 \leq x < 5\}$
- $\{x | -8 \leq x \leq 5\}$
- $\{x | -1 < x \leq 6\}$
- $\{x | -1 \leq x \leq 6\}$
- none of these

(b) $A \cap B$

- $\{x | -8 \leq x < 5\}$
- $\{x | -8 \leq x \leq 5\}$
- $\{x | -1 < x \leq 6\}$
- $\{x | -1 \leq x \leq 6\}$
- none of these

3. Question Details SPreCalc6 1.2.049. [1700549]

Simplify the expression and eliminate any negative exponent(s).

(a) $\dfrac{6a^5b^{-3}}{2a^{-6}b^9}$

(b) $\left(\dfrac{y}{2x^{-2}}\right)^{-3}$

4. Question Details sprecalc6 1.3.071.nva [1614234]

Factor the trinomial.

$3x^2 - 25x + 42$

5. Question Details sprecalc6 1.3.073.mi.nva [1615934]

Factor the trinomial.

$(2x + 3)^2 + 6(2x + 3) + 8$

6. Question Details SPreCalc6 1.3.076. [1701555]

Use a Special Factoring Formula to factor the expression.

$(x + 5)^2 - 16$

7. Question Details SPreCalc6 1.3.085. [1615401]

Factor the expression by grouping terms.

$2x^3 + 7x^2 - 6x - 21$

8. Question Details sprecalc6 1.4.010.mi.nva [1703993]

Find the domain of the expression.

$\dfrac{1}{\sqrt{x - 1}}$

- $x \geq 1$
- $x > 1$
- $x < 1$
- $x \leq 0$
- all real numbers

9. Question Details sprecalc6 1.4.041.nva [1614578]

Perform the addition or subtraction and simplify. (Give your answer in factored form.)

$$\frac{1}{x+9}+\frac{5}{x-8}$$

10. Question Details sprecalc6 1.5.050.mi.nva [1615010]

Solve the equation by factoring.

$$6x(x-1)=25-11x$$

$x =$ ______ (smaller value)

$x =$ ______ (larger value)

11. Question Details SPreCalc6 2.1.017. [2687442]

Evaluate the function at the indicated values. (If an answer is undefined, enter UNDEFINED.)

$$f(x)=x^2-6$$

$f(-3) =$

$f(3) =$

$f(0) =$

$f\left(\frac{1}{2}\right) =$

$f(10) =$

12. Question Details SPreCalc6 2.1.023. [2687379]

Evaluate the function at the indicated values. (If an answer is undefined, enter UNDEFINED.)

$$f(x)=6x^2+2x-12$$

$f(0) =$

$f(2) =$

$f(-2) =$

$f(\sqrt{2}) =$

$f(x+1) =$

$f(-x) =$

13. Question Details SPreCalc6 2.1.027. [1614687]

Evaluate the piecewise defined function at the indicated values.

$$f(x) = \begin{cases} x^2 & \text{if } x < 0 \\ x + 3 & \text{if } x \geq 0 \end{cases}$$

$f(-4) =$ ______

$f(-3) =$ ______

$f(0) =$ ______

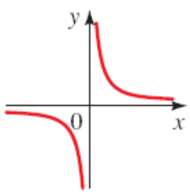
$f(3) =$ ______

$f(4) =$ ______

14. Question Details SPreCalc6 2.2.051. [1695642]

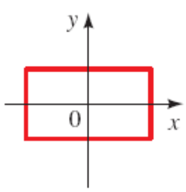
Use the Vertical Line Test to determine whether the curve is the graph of a function of x.

(a)



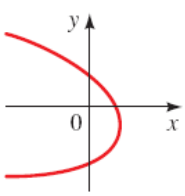
- is a function
- is not a function

(b)



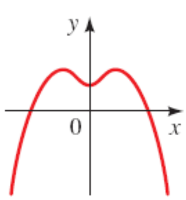
- is a function
- is not a function

(c)



- is a function
- is not a function

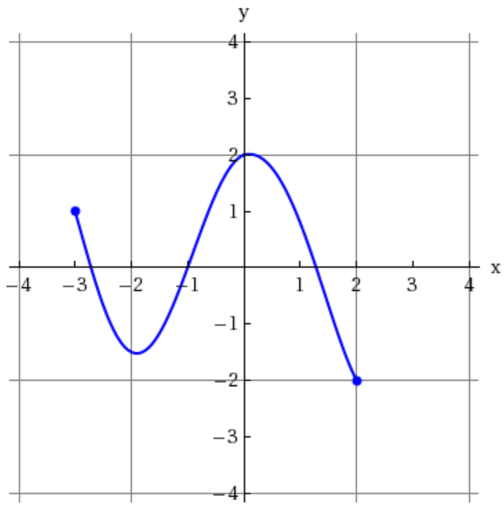
(d)



- is a function
- is not a function

15. Question Details SPreCalc6 2.2.053.MI. [2690877]

Consider the following graph.



Use the Vertical Line Test to determine whether the curve is the graph of a function of *x*.

- Yes, the curve is a function of *x*.
- No, the curve is not a function of *x*.

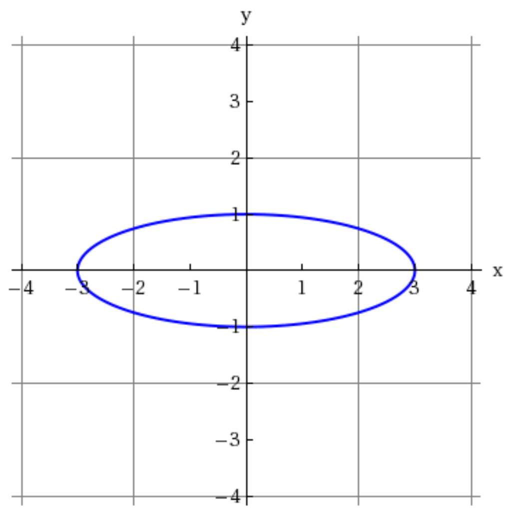
If the curve is a function, state the domain and range. (Enter your answers using interval notation. If the curve is not a function enter NONE.)

domain

range

16. Question Details SPreCalc6 2.2.054. [1615521] -

Consider the following graph.



Use the Vertical Line Test to determine whether the curve is the graph of a function of *x*.

- Yes, the curve is a function of *x*.
- No, the curve is not a function of *x*.

If the curve is a function, state the domain and range. (Enter your answers using interval notation. If the curve is not a function enter NONE.)

domain

range

17. Question Details SPreCalc6 2.2.060.MI. [1699358] -

Determine whether the equation defines *y* as a function of *x*. (See Example 9.)

$$x^2 + (y - 3)^2 = 8$$

- is a function
- is not a function

18. Question Details SPreCalc6 2.2.063. [1695633] -

Determine whether the equation defines *y* as a function of *x*. (See Example 9.)

$$x^2y + y = 2$$

- is a function
- is not a function

19. Question Details SPreCalc6 2.5.003. [1615859] -

Fill in the blank with the appropriate axis (*x*-axis or *y*-axis).

(a) The graph of $y = -f(x)$ is obtained from the graph of $y = f(x)$ by reflecting in the ---Select--- .

(b) The graph of $y = f(-x)$ is obtained from the graph of $y = f(x)$ by reflecting in the ---Select--- .

20. Question Details SPreCalc6 2.5.011. [2452058]

Suppose the graph of f is given. Describe how the graph of each function can be obtained from the graph of f.

(a) $y = 7f(x + 6) - 2$

- shift right 6 units, stretch horizontally by a factor of 7, then shift up 2 units
- shift right 6 units, stretch horizontally by a factor of 7, then shift down 2 units
- shift left 6 units, stretch vertically by a factor of 7, then shift up 2 units
- shift left 6 units, stretch horizontally by a factor of 7, then shift down 2 units
- shift left 6 units, stretch vertically by a factor of 7, then shift down 2 units

(b) $y = 7f(x - 6) + 2$

- shift right 6 units, stretch vertically by a factor of 7, then shift up 2 units
- shift left 6 units, stretch horizontally by a factor of 7, then shift up 2 units
- shift right 6 units, stretch horizontally by a factor of 7, then shift up 2 units
- shift right 6 units, stretch vertically by a factor of 7, then shift down 2 units
- shift left 6 units, stretch horizontally by a factor of 7, then shift down 2 units

21. Question Details SPreCalc6 2.7.004. [1613541]

True or false?

(a) If f has an inverse, then f^{-1} is the same as $\dfrac{1}{f(x)}$.

- true
- false

(b) If f has an inverse, then $f^{-1}(f(x)) = x$.

- true
- false

22. Question Details SPreCalc6 2.5.051. [1615694]

A function f is given, and the indicated transformations are applied to its graph (in the given order). Write the equation for the final transformed graph.

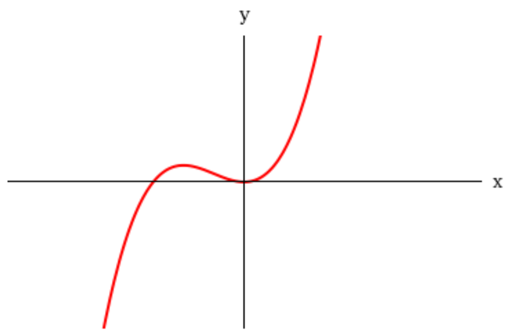
$f(x) = \sqrt[4]{x}$; reflect in the y-axis and shift upward 2 units

$y =$

23. Question Details SPreCalc6 2.7.005. [1696117]

The graph of a function *f* is given. Determine whether *f* is one-to-one.

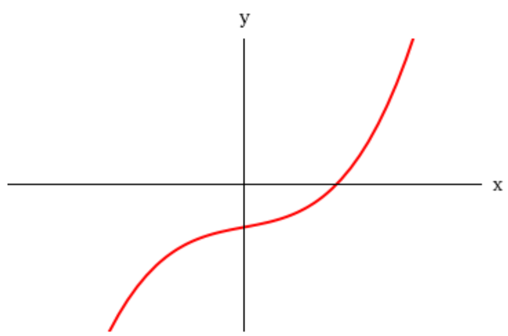
- is one-to-one
- is not one-to-one



24. Question Details SPreCalc6 2.7.006. [1696108]

The graph of a function *f* is given. Determine whether *f* is one-to-one.

- is one-to-one
- is not one-to-one



25. Question Details SPreCalc6 2.7.012. [1696132]

Determine whether the function is one-to-one.

$f(x) = 3x - 7$

- is one-to-one
- is not one-to-one

Assignment Details

Description

This is Exam #2. Please work all the problems, showing ALL necessary work.

1. Question Details SPreCalc6 5.1.009. [2684190]

Find the missing coordinate of P, using the fact that P lies on the unit circle in the given quadrant.

Coordinates	Quadrant
$P\left(-\frac{4}{5}, \quad\right)$	III

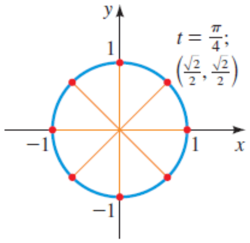
2. Question Details SPreCalc6 5.1.011. [2684220]

Find the missing coordinate of P, using the fact that P lies on the unit circle in the given quadrant.

Coordinates	Quadrant
$P\left(\quad, \frac{1}{5}\right)$	II

3. Question Details SPreCalc6 5.1.021. [1713018]

Consider the following.

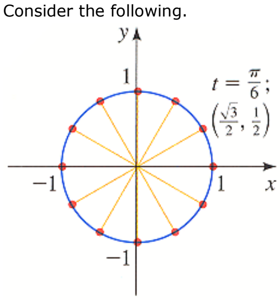


Find t and the terminal point determined by t for each point in the figure, where t is increasing in increments of $\pi/4$.

t	Terminal Point
0	( )
$\frac{\pi}{4}$	$\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
	( )
	( )
	( )
	( )
	( )
	( )
2π	( )

4. Question Details SPreCalc6 5.1.022. [1713072]

Consider the following.

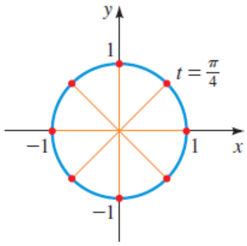


Find t and the terminal point determined by t for each point in the figure, where t is increasing in increments of $\pi/6$.

t	**Terminal Point**
0	( )
$\frac{\pi}{6}$	$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
	( )
	( )
	( )
	( )
	( )
	( )
	( )
	( )
	( )
	( )
2π	( )

5. Question Details SPreCalc6 5.2.003. [2694129]

Find sin t and cos t for the values of t whose terminal points are shown on the unit circle in the figure. t increases in increments of $\pi/4$.



t	sin t	cos t
0		
$\frac{\pi}{4}$		
$\frac{\pi}{2}$		
$\frac{3\pi}{4}$		
π		
$\frac{5\pi}{4}$		
$\frac{3\pi}{2}$		
$\frac{7\pi}{4}$		

6. Question Details SPreCalc6 5.2.011. [1776239]

Find the exact value of the trigonometric function at the given real number.

(a) $\sin \frac{8\pi}{3}$

(b) $\csc \frac{8\pi}{3}$

(c) $\cot \frac{8\pi}{3}$

7. Question Details SPreCalc6 5.2.015. [1776309]

Find the exact value of the trigonometric function at the given real number.

(a) $\sec \frac{10\pi}{3}$

(b) $\csc \frac{10\pi}{3}$

(c) $\sec\left(-\frac{\pi}{6}\right)$

8. Question Details SPreCalc6 5.3.017. [2708815]

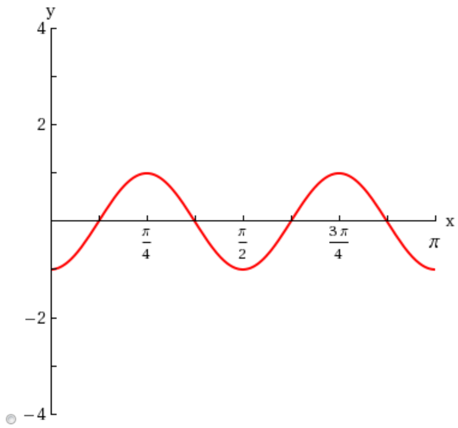
Find the amplitude and period of the function.

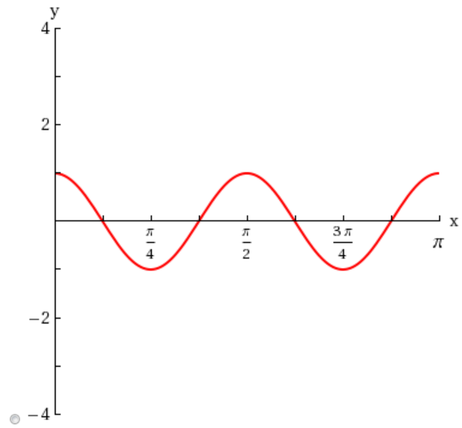
$y = \cos 4x$

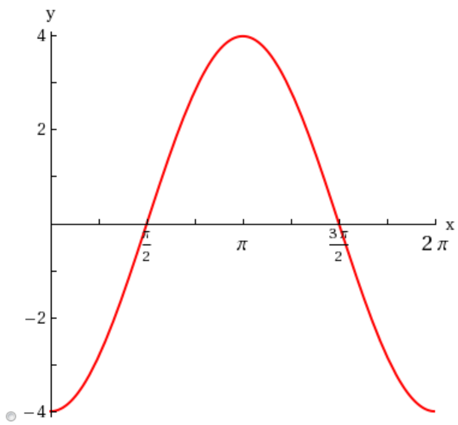
amplitude

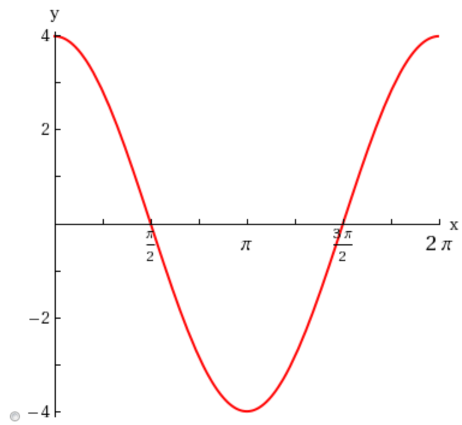
period

Sketch the graph of the function.









9. Question Details SPreCalc6 5.3.021. [2708766]

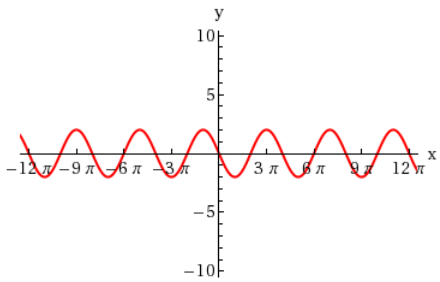
Find the amplitude and period of the function.

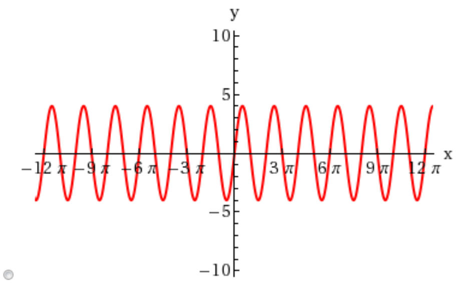
$$y = 4 \sin \frac{1}{2}x$$

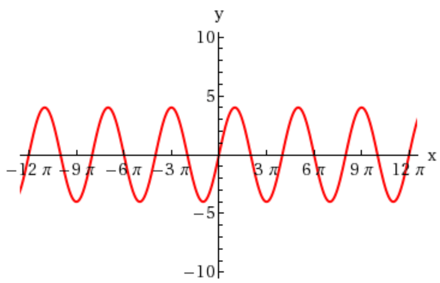
amplitude

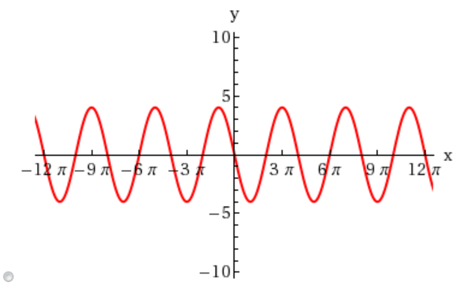
period

Sketch the graph of the function.







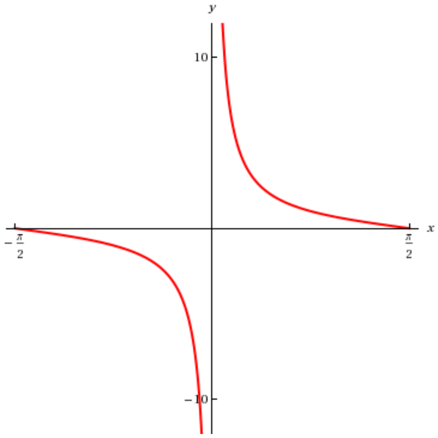


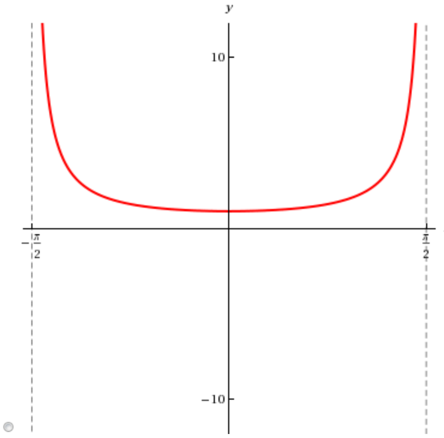
10. Question Details SPreCalc6 5.4.001. [1716533]

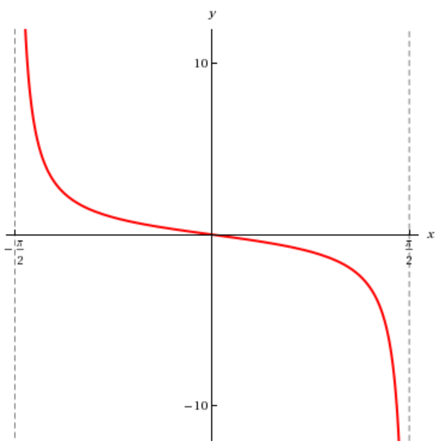
The trigonometric function $y = \tan x$ has period and the following asymptotes.

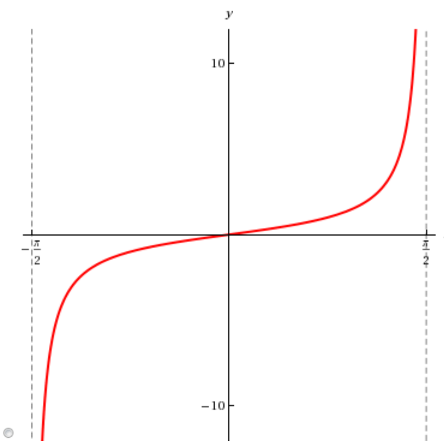
- $x = 2n\pi$ (n is an integer)
- $x = \frac{\pi}{2} + 2n\pi$ (n is an integer)
- $x = n\pi$ (n is an integer)
- $x = \frac{\pi}{2} + n\pi$ (n is an integer)
- $x = \frac{3\pi}{2} + 2n\pi$ (n is an integer)

Sketch a graph of this function on the interval $(-\pi/2, \pi/2)$.









11. Question Details SPreCalc6 6.1.015. [1776296]

Find the degree measure of the angle with the given radian measure.

$\frac{\pi}{6}$

°

12. Question Details SPreCalc6 6.1.028.MI. [2655628]

The measure of an angle in standard position is given. Find two positive angles and two negative angles that are coterminal with the given angle. (Enter your answers as a comma-separated list.)

135°

°

13. Question Details SPreCalc6 6.1.030. [1776286]

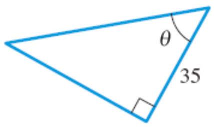
The measure of an angle in standard position is given. Find two positive angles and two negative angles that are coterminal with the given angle. (Enter your answers as a comma-separated list.)

$\frac{5\pi}{6}$

rad

14. Question Details SPreCalc6 6.2.033. [1762584]

Solve the right triangle. (Assume θ = 53°.)



Find the length of the side opposite to the given angle. (Round your answer to two decimal places.)

Find the length of the hypotenuse. (Round your answer to two decimal places.)

Find the other acute angle.

°

15. Question Details SPreCalc6 6.3.036.MI. [2678450]

Find the quadrant in which θ lies from the information given.

$\tan\theta < 0$ and $\sin\theta > 0$

- I
- II
- III
- IV

16. Question Details SPreCalc6 6.3.046. [2708293]

Find the values of the trigonometric functions of θ from the information given.

$\cos\theta = -\frac{3}{5}$, θ in Quadrant III

$\sin\theta$ =

$\tan\theta$ =

$\csc\theta$ =

$\sec\theta$ =

$\cot\theta$ =

17. Question Details SPreCalc6 6.5.001. [1763555]

In triangle *ABC* with sides *a*, *b*, and *c* the Law of Sines states that

$\frac{\text{---Select---}}{a} = \frac{\text{---Select---}}{b} = \frac{\text{---Select---}}{c}$.

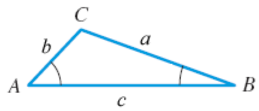
18. Question Details SPreCalc6 6.5.009. [1763578]

Solve the triangle using the Law of Sines. (Assume $c = 75$, $\angle A = 43°$, and $\angle B = 25°$. Round lengths to two decimal places.)

$a =$ ____

$b =$ ____

$\angle C =$ ____ °



19. Question Details SPreCalc6 6.6.001. [2715786]

For triangle *ABC* with sides *a*, *b*, and *c* the Law of Cosines states the following.

$c^2 =$

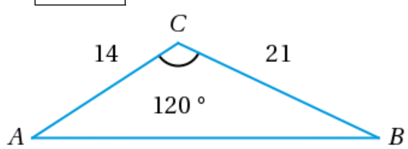
20. Question Details SPreCalc6 6.6.011. [2563604]

Solve triangle *ABC*. (Round the length to three decimal places and the angles to one decimal place.)

$c =$ ____

$\angle A =$ ____ °

$\angle B =$ ____ °



Assignment Details

Question 1 2 3 4 5 6 7 8 9 10

Description

This is Exam #3. Please work all the problems, showing ALL necessary work.

1. Question Details SPreCalc6 7.1.004. [2703858]

Write the trigonometric expression in terms of sine and cosine, and then simplify.

$\cos t \csc t$

2. Question Details SPreCalc6 7.1.017. [2703798]

Simplify the trigonometric expression.

$$\frac{\csc^2 x - 1}{\csc^2 x}$$

3. Question Details SPreCalc6 7.1.062. [1719017]

Verify the identity.

$$\frac{1 + \sec^2 x}{1 + \tan^2 x} = \cos^2 x + 1$$

4. Question Details SPreCalc6 7.2.006. [2708244]

Use an Addition or Subtraction Formula to find the exact value of the expression, as demonstrated in Example 1.

$\cos 165°$

5. Question Details SPreCalc6 7.3.006.MI. [2678458]

Find $\sin 2x$, $\cos 2x$, and $\tan 2x$ from the given information.

$\csc x = 8, \quad \tan x < 0$

$\sin 2x =$

$\cos 2x =$

$\tan 2x =$

6. Question Details SPreCalc6 8.1.031. [2694689]

Find the rectangular coordinates for the point whose polar coordinates are given.

$(7, 7\pi)$

$(x, y) = \Big(\qquad \Big)$

7. Question Details SPreCalc6 8.1.035-042.501.XP.MI. [1870983]

A point in rectangular coordinates is given. Convert the point to polar coordinates ($r > 0$, $0 \le \theta < 2\pi$).

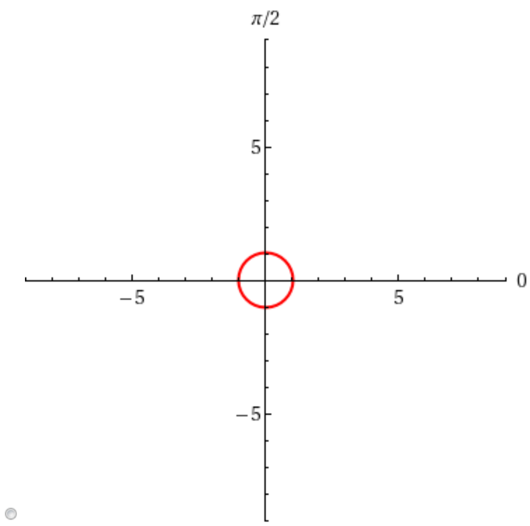
$(-7, -7)$

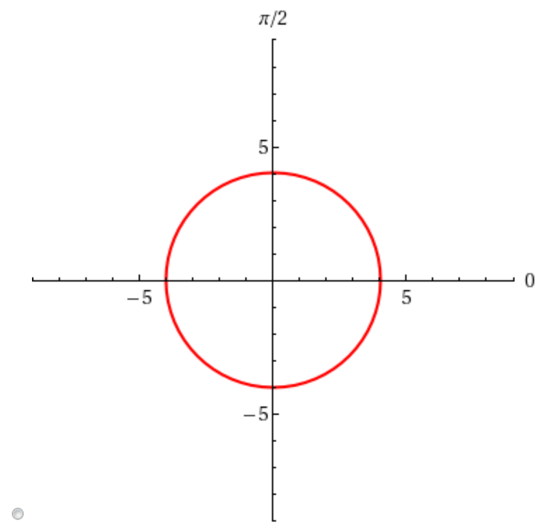
$(r, \theta) = \Big(\qquad , \qquad \Big)$

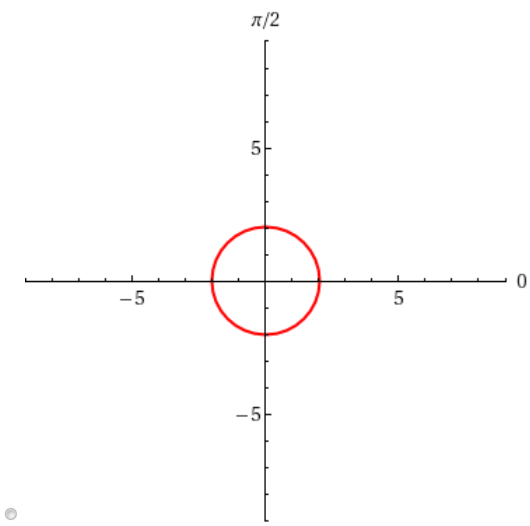
8. Question Details SPreCalc6 8.2.017. [2706031]

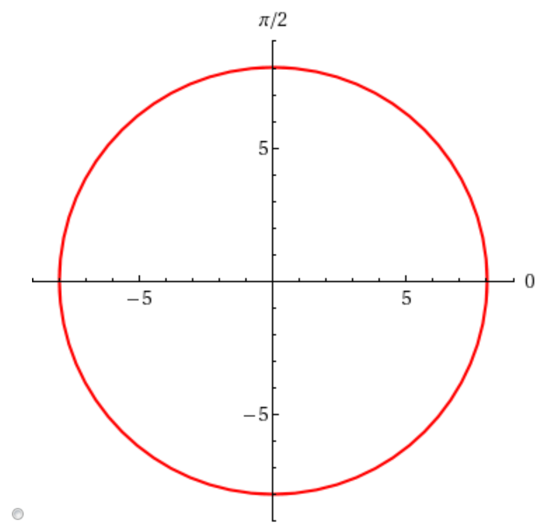
Sketch a graph of the polar equation.

$r = 4$









Express the equation in rectangular coordinates. (Use variables x and y.)

9. Question Details SPreCalc6 8.3.030.MI. [2678942]

Write the complex number in polar form with argument θ between 0 and 2π.

$$3 + 3\sqrt{3}i$$

10. Question Details SPreCalc6 8.3.069. [1741069]

Find the indicated power using De Moivre's Theorem. (Express your fully simplified answer in the form $a + bi$.)

$$(1 + i)^{12}$$

Assignment Details

Description

This homework assignment covers Chapter 11: 11.1, 11.2, 11.3... Please work as many problems as possible and turn in your work by the due date. Late homework is NOT accepted. As always, if you need anything, please email me Joshua.Patterson@tamuc.edu

1. Question Details SPreCalc6 11.1.002. [2710503]

The graph of the equation $x^2 = 4py$ is a parabola with focus $F(x, y) = \left(\quad \right)$ and directrix $y =$. So the graph of $x^2 = 8y$ is a parabola with focus $F(x, y) = \left(\quad \right)$ and directrix $y =$ ____.

2. Question Details SPreCalc6 11.1.029. [2715757]

Find an equation for the parabola that has its vertex at the origin and satisfies the given condition.

Focus $F(0, 2)$

3. Question Details SPreCalc6 11.1.031. [1615950]

Find an equation for the parabola that has its vertex at the origin and satisfies the given condition.

Focus $F(-5, 0)$

4. Question Details SPreCalc6 11.1.034.MI. [2715777]

Find an equation for the parabola that has its vertex at the origin and satisfies the given condition.

Directrix $y = 7$

5. Question Details SPreCalc6 11.1.038.MI. [2715772]

Find an equation for the parabola that has its vertex at the origin and satisfies the given condition.

Directrix has y-intercept 4

6. Question Details SPreCalc6 11.2.002. [2735529]

The graph of the equation $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ with $a > b > 0$ is an ellipse with vertices $(x, y) = \left(\quad \right)$ and $(x, y) = (-a, 0)$ and foci $(\pm c, 0)$, where $c =$. So the graph of $\dfrac{x^2}{10^2} + \dfrac{y^2}{8^2} = 1$ is an ellipse with vertices

$(x, y) = \left(\quad \right)$ (larger x-value) and $(x, y) = \left(\quad \right)$ (smaller x-value) and foci

$(x, y) = \left(\quad \right)$ (larger x-value) and $(x, y) = \left(\quad \right)$ (smaller x-value).

7. Question Details SPreCalc6 11.2.036.MI. [2735921]

Find an equation for the ellipse that satisfies the given conditions.

Length of major axis: 8, length of minor axis: 6, foci on x-axis

8. Question Details SPreCalc6 11.2.038.MI. [2748138]

Find an equation for the ellipse that satisfies the given conditions.

Foci: $(\pm 7, 0)$, length of major axis: 16

9. Question Details SPreCalc6 11.2.039. [2747008]

Find an equation for the ellipse that satisfies the given conditions.

Endpoints of major axis: $(\pm 10, 0)$, distance between foci: 4

10. Question Details SPreCalc6 11.3.002. [2735951]

The graph of the equation $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ with $a > 0, b > 0$ is a hyperbola with vertices $(x, y) = \left(\quad \right)$ and $(x, y) = (-a, 0)$ and foci $(x, y) = (\pm c, 0)$, where $c =$. So the graph of $\frac{x^2}{4^2} - \frac{y^2}{3^2} = 1$ is a hyperbola with vertices $(x, y) = \left(\quad \right)$ (larger x-value) and $(x, y) = \left(\quad \right)$ (smaller x-value) and foci $(x, y) = \left(\quad \right)$ (larger x-value) and $(x, y) = \left(\quad \right)$ (smaller x-value).

11. Question Details SPreCalc6 11.3.031. [2747001]

Find an equation for the hyperbola that satisfies the given conditions.

Foci: $(\pm 10, 0)$, vertices: $(\pm 6, 0)$

12. Question Details SPreCalc6 11.3.034.MI. [2748122]

Find an equation for the hyperbola that satisfies the given conditions.

Foci: $(\pm 11, 0)$, vertices: $(\pm 8, 0)$

13. Question Details SPreCalc6 11.3.040.MI. [2747009]

Find an equation for the hyperbola that satisfies the given conditions.

Foci: $(9, 0)$, hyperbola passes through $(12, 3)$