Name:		1	2	3	4	5	6
Teacher:		Period:		Date:			

Precalculus

Show All Work For Credit

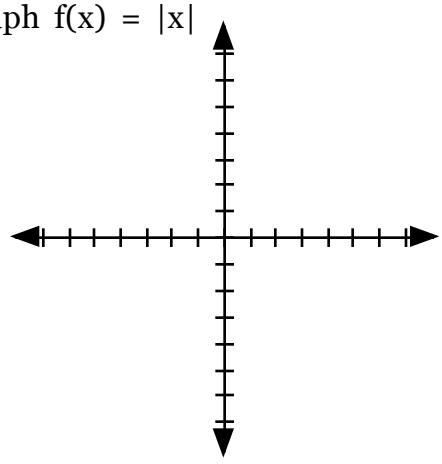
1) *Domain Restrictions:*

Find the domain of $\frac{1}{\sqrt[3]{x^2+9}}$:

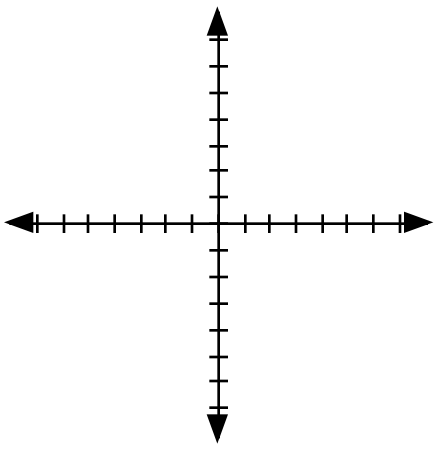
Write a function with domain $x \geq 7$.

2) *Transformation*:

Graph f(x) = |x|



Graph f(x) = 2|x - 2| + 3



3) *Combinations*: $f(x) = x^2 + 2$, $g(x) = 3x^2 - 2$

a) find (f+g)(x)

b) find (f-g)(x)

c) find (fg)(x)

d) find $(\frac{f}{g})(x)$

(a)

(b)

(c)

(d)

4) *Composition:*

f(x) = $x-8$, g(x) = x^2-2x;

Find ($f \circ g$)(x)

Find ($g \circ f$)(x)

---

5) *Inverses*:

$y=2x-6$. Find the inverse of y.

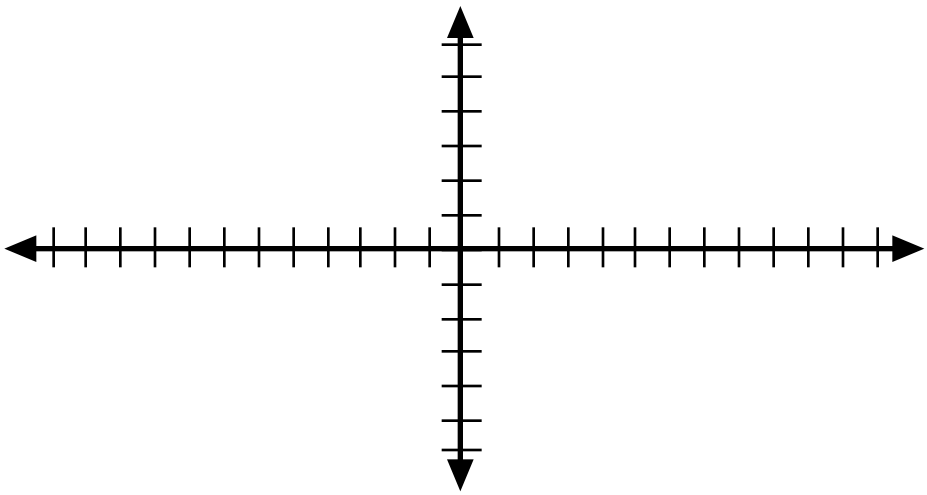
---

6) *Polynomial Zeros*:

Find the zeros of: $f(x) = x^3 + x^2 - 14x - 24$

7) *Rational Functions*:

Graph: $f(x) = \dfrac{(x-7)(x+1)}{(x-2)(x+3)(x-5)}$



---

8) *Exponentials*:

Solve: $\left(\dfrac{1}{16}\right)4^{x} = \left(\dfrac{1}{8}\right)16^{x-3}$

---

9) *Logarithms*:

a) find: $\log_5(625)$

b) find: $\log_3\left(\dfrac{9}{243}\right)$

c) expand: $\ln\dfrac{\sqrt{a^2(b+1)}}{c^3}$

(a)

(b)

(c)

---

10) *Radian Conversions:*

Convert $\dfrac{13\pi}{10}$ to degrees.

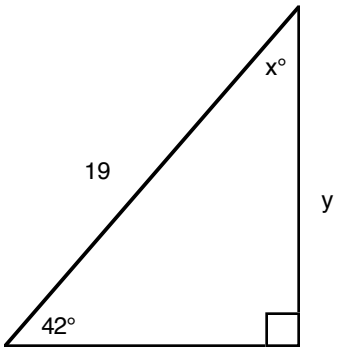
Convert **230°** to radians.

11) *Coterminal Angles*: Which of these angles is (are) coterminal with **-48°**?

8232° ☐ **A** **3642°** ☐ **B** **-4658°** ☐ **C** **-6168°** ☐ **D**

---

12) *Trigonometry*: Solve for the other parts of this triangle.



x= ☐

y= ☐

y= ☐

---

13) *Completing Trig Tables*:

Given: $\tan x = \frac{2}{3}$ and $\cos x > 0$, find the remaining functions.

sinx	
cosx	
tanx	
cscx	
secx	
cotx	

---

14) *Solving Trig Equations*:

Solve: $6 - 4\sin x = 8$ for 0 ≤° x < 360°

☐

15) *Identities*:

Prove: $\sec^2 x \cot x - \cot x = \tan x$

---

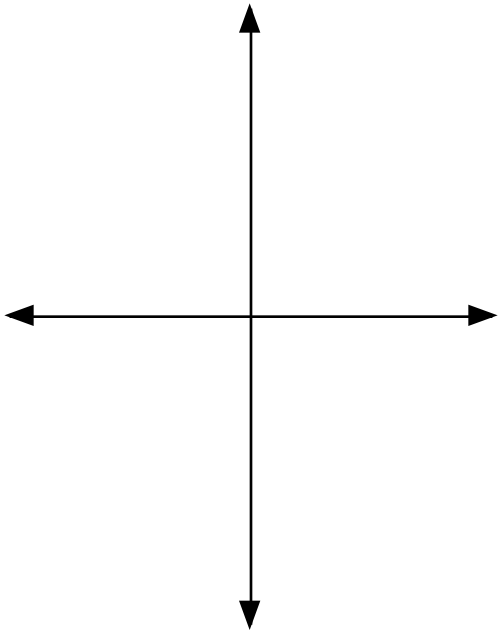
16) Sine/Cosine Graphs:

Graph: $y = -4\cos(3\pi x - 12\pi) - 3$

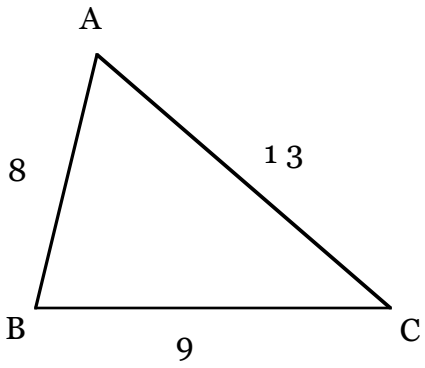
---

17) Tangent Graphs:

Graph: $y = 3\tan(2x)$



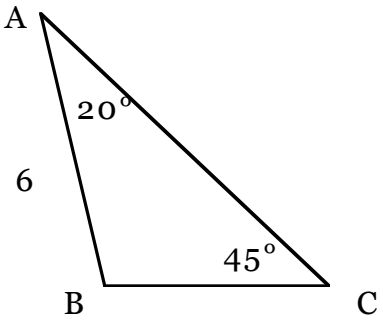
18) *Law of Sine/Cosine:*
Solve all parts of the triangle.
Triangle not drawn to scale.



A	
B	
C	
a	
b	
c	

---

19) *Law of Sine/Cosine*:
Solve all parts of the triangle
Triangle not drawn to scale.



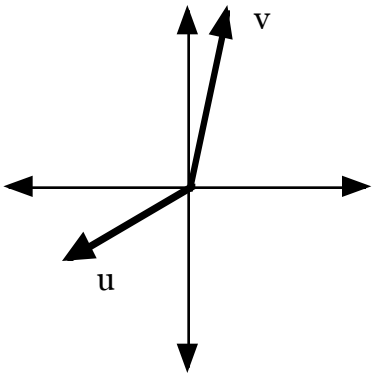
A	
B	
C	
a	
b	
c	

---

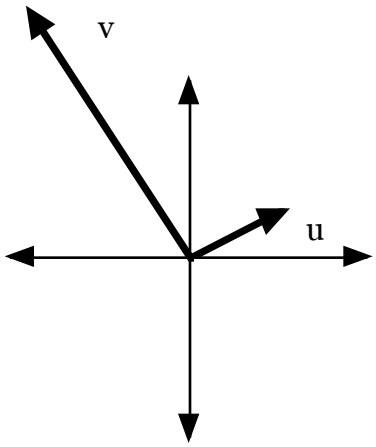
20) *Law of Sine/Cosine Applications*:

Two men walk away from each other at a certain angle. One walks 20 feet, the other walks 15 feet. The distance between them now is 30 feet. What was the angle they left from.

21) *Adding Vectors - Graphically:*
Draw the resultant vector given **u** and **v**.



Draw: **u + v**



Draw: $2\mathbf{u} + \frac{1}{3}\mathbf{v}$

---

22) *Adding Vectors - Algebraically:*
Find **u + v**. Give your answer in the form given.

u = <-2 , 8 >

v = <-7 , 2>

||u|| = 4 @ 132°

||v|| = 3 @ 312°

---

23) *Angle Between Vectors:*
Find the angle between **u** and **v**.
Round your answer to one decimal.

u = <5 , -3 >

v = <1, 9>

---

24) *Sequences:*
Find the next three terms of the sequence:

1, 2, 4, 8, 18, 41, 87, ...

25) *Arithmetic Sequences:*

2, 8, 14, 20, … ,

What are the next four terms?

What is the 2006th term?

What is the sum of the first fifty terms?

26) *Geometric Sequences:*

$\frac{3}{4}, \frac{3}{10}, \frac{3}{25}, \frac{6}{125}, \cdots,$

What are the next four terms?

(no decimals)

What is the 2006th term?

What is the sum of the first fifty terms?

27) *Recursive Sequences:*

a) What are the next four terms?

$A_1 = 10$

$A_{k+1} = 3A_k - 20$

b) What is a recursive formula for this sequence?

3, 16, 81, 406, … ,

28) *Counting*

How many 5-digit numbers exist so that...

...the leading digit isn't zero.

...it is a multiple of 5.

...and it is less than 90000.

---

29) *Probability:*

In a deck of cards, what is the probability of pulling out:

a) a face card?

b) a heart and then a 13? (No replacement.)

c) a 7 or a club or a heart?

Express your answers as percents.

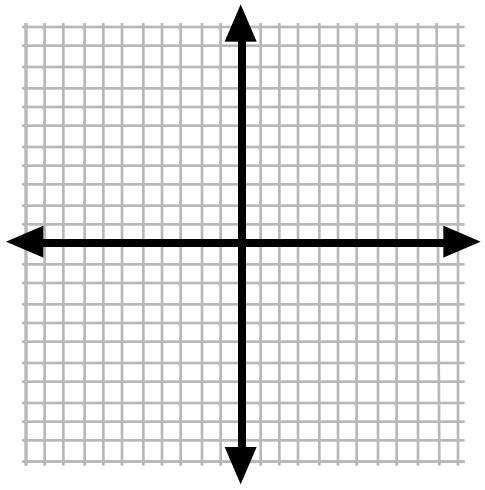
a b c

---

30) *Graphing Parametrics:*

Graph: $x = t - 4$
$y = 2t - 3$

For: $0 \le t \le 4$



---

31) *Eliminating*

Eliminate the parameter from (30)