Pre-Calculus

4.1-4.4 – PRACTICE **ASSG #_____**

Name_____Date_____Per_____

I. Let θ be a positive angle in standard position whose terminal side passes through the given point. Draw each angle and find a) sin θ, b) cos θ, and c) θ. If θ is on the II, III, or IV Q, find d) the reference angle α. Leave a) and b) in simplest form, and c) and d) rounded to the nearest degree). For 6, find the value of all six trig functions, θ and α.

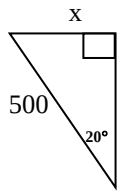
1) $(3,4)$ 2) $(3,-\sqrt{7})$ 3) $(-\sqrt{5},2)$ 4) $(-20,-21)$ 5) $(-4\sqrt{3},-1)$ 6) $(-\sqrt{2},\sqrt{2})$

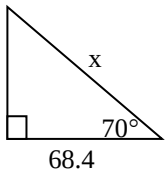
II. Let θ or *t* be a positive angle in standard position whose terminal side passes through the given point. Find θ or *t* <u>without using a calculator</u>.

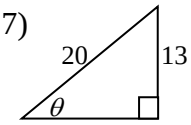
7) $(5,5)$ 8) $(4,4\sqrt{3})$ 9) $(2\sqrt{3},2\sqrt{3})$ 10) $(2\sqrt{3},-2)$ **(7-10 find θ (degrees)**

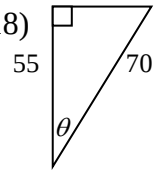
11) $(-\frac{\sqrt{3}}{2},\frac{1}{2})$ 12) $(\sqrt{2},-\sqrt{6})$ 13) $-1,-\frac{1}{\sqrt{3}}$ 14) $a,\frac{a}{\sqrt{3}}$ **(11-14 find *t* (radians)**

III. Find "x" or "θ" in each triangle. ("x" to the nearest tenth and θ to the nearest degree).

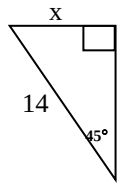
15) 

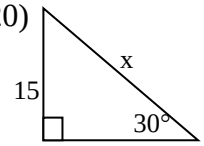
16) 

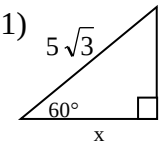
17) 

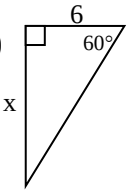
18) 

IV. Find the exact value of "x" in each triangle. Leave your answers in simplest radical form.

19) 

20) 

21) 

22) 

V. Find a value of θ that satisfies the given equation. Round your answer to the nearest hundredth.

23) $\sin\theta = 0.6626$ 24) $\cos\theta = .9964$ 25) $\cot\theta = ¼$ 26) $\csc\theta = \frac{2}{3}$

VI. Degrees/Radians

27) Change $\frac{5\pi}{6}$ radians to degree measure.

28) Change 70° to radian measure in terms of π.

29) For a circle of radius 7 feet, find the arc length *s* subtended by a central angle of 18 °.
<u>Leave the answer in terms of π.</u>

VII. Find the value of each of the following expressions. Leave answers in simplest form. No decimal answers.

30) $\sin \frac{3\pi}{2} - \sec(15\pi)$

31) $\cos \frac{5\pi}{4} + \tan \frac{5\pi}{3}$

32) $\cot \frac{5\pi}{2} + \sin(-20\pi)$

33) $\sin \frac{3\pi}{4} - \cos \frac{\pi}{3}$

34) $\csc \frac{5\pi}{6} + \tan \frac{5\pi}{3}$

35) a) csc 90° b) sec 180° c) cot 270° d) $\sin \frac{\pi}{3}$ e) $\cos -\frac{5\pi}{3}$ f) $\tan(-\frac{11\pi}{6})$

VIII. Coterminal Angles/Definitions:

36) Find the least negative angle conterminal with $\frac{5\pi}{12}$

37) Find the least positive angle conterminal with $\frac{23\pi}{5}$

38) Find a) the least negative and b) the least positive angle measurement coterminal with 240°.

39) Define: a) Angle, b) Reference Angle, c) Coterminal Angle, d) Quadrantal Angle, and e) Angle in Standard Position

IX. Identities:

40) List the Pythagorean Identities
41) List the Reciprocal Identities
42) List the Quotient Identities

X. Co-Functions:
Fill in the blanks with the corresponding co-function:

43) sin 30° = _____ 44) $\cot \frac{\pi}{2}$ = _____ 45) $\sec \frac{\pi}{4}$ = _____ 46) cos 45°= _____

XI: Applications:

47) Juliet on her balcony, 25 feet off the ground, spots Romeo approaching on ground level. She uses her angle measuring device and finds his position to be 3º from the horizontal (angle of depression = 3º). **<u>To the nearest tenth</u>**, how far away is Romeo from Juliet (on her balcony)?

DRAWING	WORK: INCLUDE SET UP AND WORK

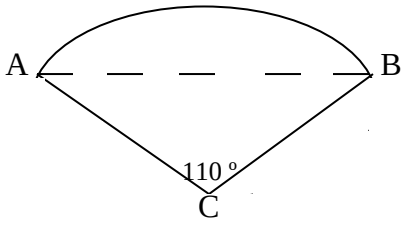
48) The angle of elevation from a sailboat to the top of a lighthouse on the shore measures 25º. The sailboat is 322 ft away from the base of the lighthouse.
To the nearest foot, find the height of the lighthouse.

DRAWING	WORK: INCLUDE SET UP AND WORK

49) Each leg of an isosceles triangle is 260 cm. long and each base angle measures 35°.
To the nearest hundredth, find the length of the base.

DRAWING	WORK: INCLUDE SET UP AND WORK

50) A windshield wiper arm 30.5 cm. long pivots at point C and sweeps out an angle of 110°.
To the nearest whole number, find AB.



51) A Pendulum is 35.7 cm. long, and the bob at the end of the pendulum travels 25.5 cm. **To the nearest degree** find the measure of the angle through which the pendulum swings.

DRAWING	WORK: INCLUDE SET UP AND WORK

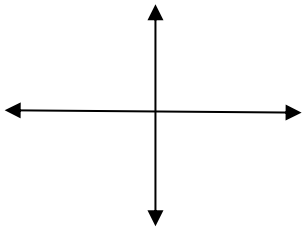
52) Byron rides his bike 6.3 **km**. If the radius on the tires of his bike is 30 **cm**., determine the number of radians that a spot on of the tires will travel during the trip.

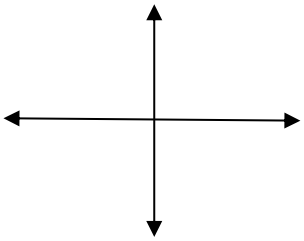
ANSWERS TO PRACTICE WORKSHEET 4.1-4.4

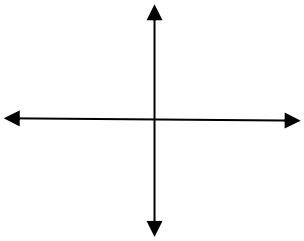
1) a) $\sin\theta$ =	13)	38) a)
b) $\cos\theta$ =	14)	b)
c) $\theta \approx$	15)	39)a)
d) $\alpha \approx$	16)	b)
2) a) $\sin\theta$ =	17)	c)
b) $\cos\theta$ =	18)	d)
c) $\theta \approx$	19)	e)
d) $\alpha \approx$	20)	40) a)
3) a) $\sin\theta$ =	21)	b)
b)$\cos\theta$ =	22)	c)
c) $\theta \approx$	23)	41) a)
d) $\alpha \approx$	24)	b)
4) a) $\sin\theta$ =	25)	c)
b) $\cos\theta$ =	26)	d)
c) $\theta \approx$	27)	e)
d) $\alpha \approx$	28)	f)
5) a) $\sin\theta$ =	29)	42) a)
b) $\cos\theta$ =	30)	b)
c) $\theta \approx$	31)	43)
d) $\alpha \approx$	32)	44)
6)$\sin\theta$ = $\sec\theta$ =	33)	45)
$\cos\theta$ = $\csc\theta$ =	34)	46)
$\tan\theta$ = $\theta \approx$	35) a)	47)
$\cot\theta$ = $\alpha \approx$	b)	48)
7)	c)	49)
8)	d)	50)
9)	e)	51)
10)	f)	52)
11)	36)	
12)	37)	

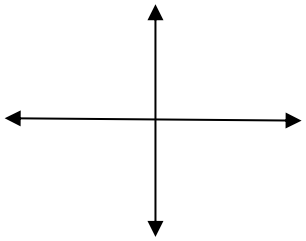
Practice 4.1-4.4

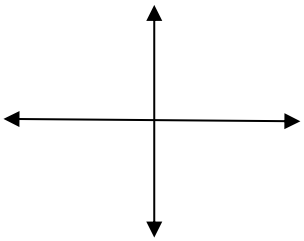
WORK/DRAWINGS for problems 1-22

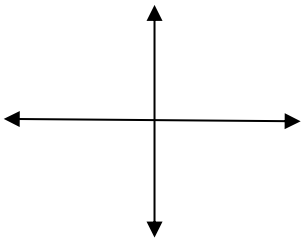
1) 

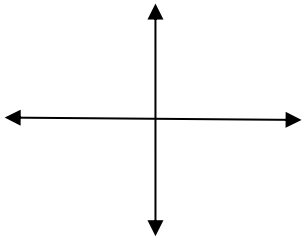
2) 

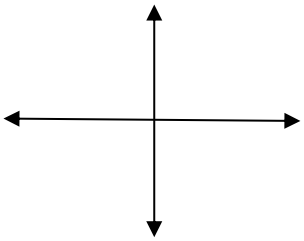
3) 

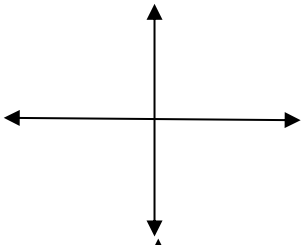
4) 

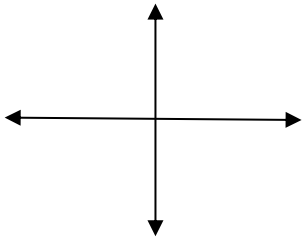
5) 

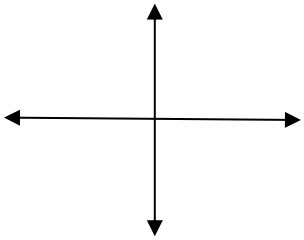
6) 

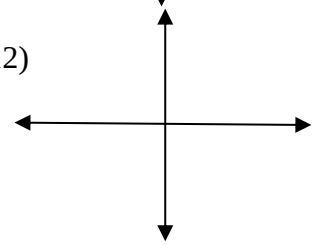
7) 

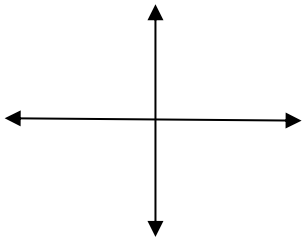
8) 

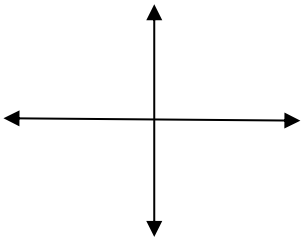
9) 

10) 

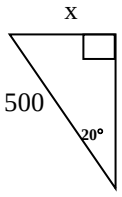
11) 

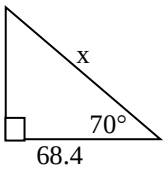
12) 

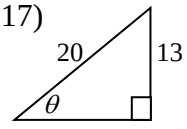
13) 

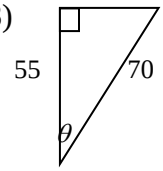
14) 

II. Find "x" or "θ" in each triangle. ("x" to the nearest tenth and θ to the nearest degree).

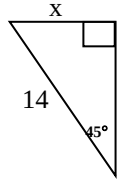
15) 

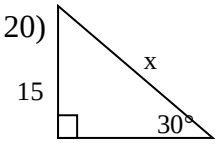
16) 

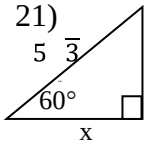
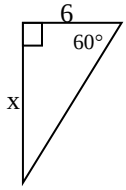
17) 

18) 

Find the exact value of "x" in each triangle. Leave your answers in simplest radical form.

19) 

20) 

21) 

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