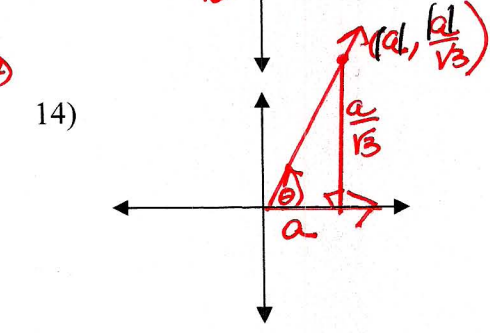
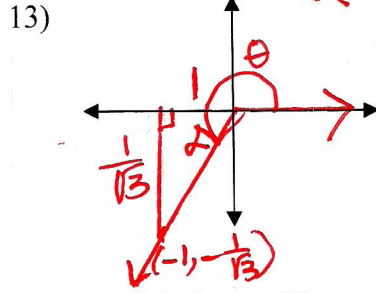
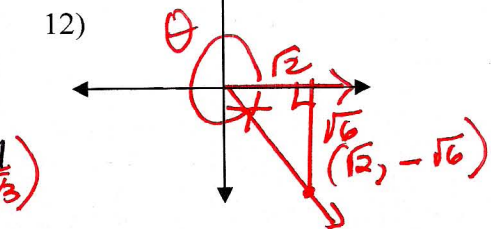
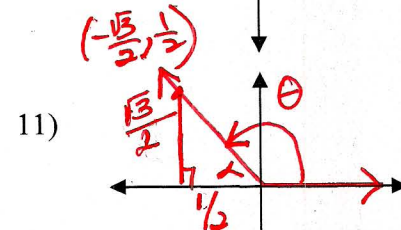
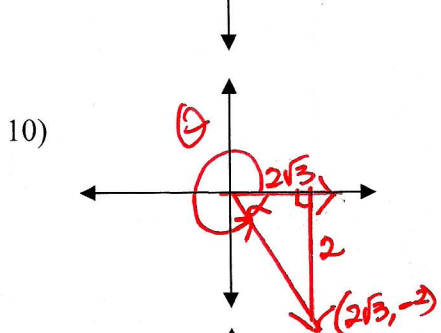
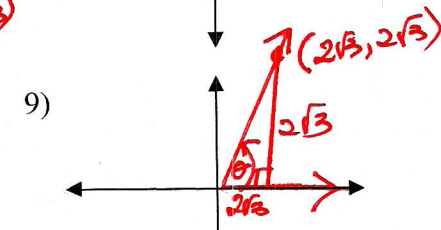
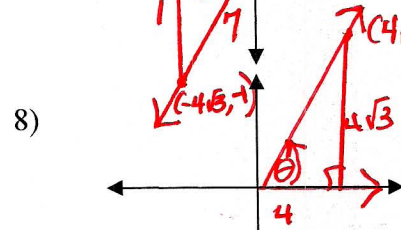
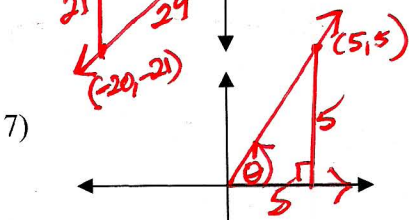
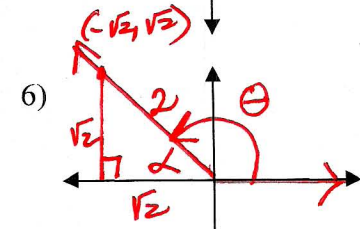
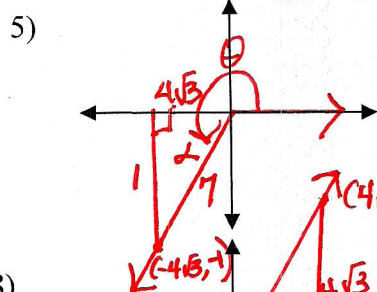
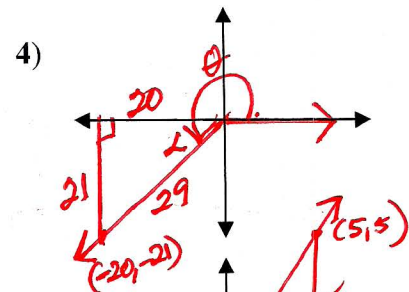
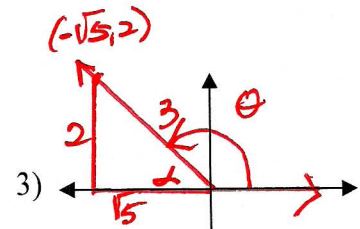
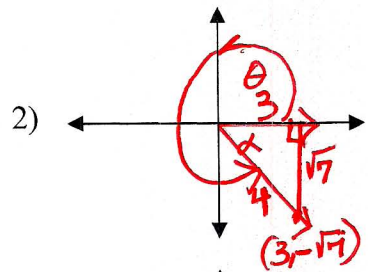
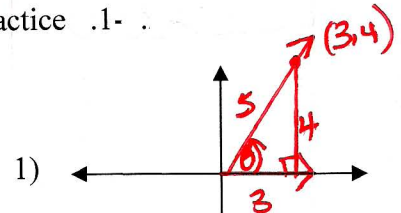


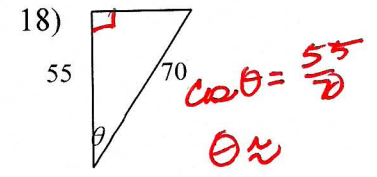
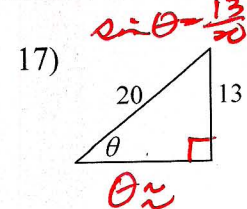
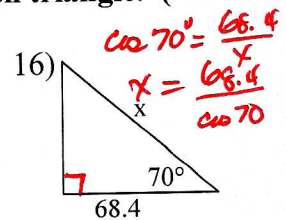
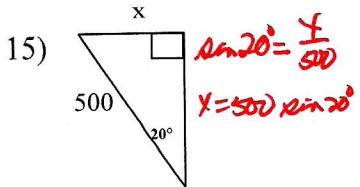
ANSWERS TO PRACTICE WORKSHEET 4.1-4.4

1) a) $\sin \theta = \frac{4}{5}$	13) $\frac{7\pi}{6}$	38) a) -120°
b) $\cos \theta = \frac{3}{5}$	14) $\frac{\pi}{6}$	b) 240°
c) $\theta \approx 53^\circ$	15) 171	39) a) Two rays with a common endpoint.
d) $\alpha \approx 53^\circ$	16) 200	b) Acute, Positive, formed by the terminal side of an \angle in SP and the x-axis.
2) a) $\sin \theta = -\frac{\sqrt{7}}{4}$	17) 41°	c) Angle in SP sharing terminal side.
b) $\cos \theta = \frac{3}{4}$	18) 38°	d) Angle in SP multiple of 90 or $\frac{\pi}{2}$
c) $\theta \approx 319^\circ$	19) $7\sqrt{2}$	e) Initial side on positive side of x-axis, vertex at origin, terminal side rotates
d) $\alpha \approx 41^\circ$	20) 30	40) a) $\sin^2 \theta + \cos^2 \theta = 1$
3) a) $\sin \theta = \frac{2}{3}$	21) $\frac{5\sqrt{3}}{2}$	b) $1 + \tan^2 \theta = \sec^2 \theta$
b) $\cos \theta = -\frac{\sqrt{5}}{3}$	22) $6\sqrt{3}$	c) $1 + \cot^2 \theta = \csc^2 \theta$
c) $\theta \approx 138^\circ$	23) 41.5°	41) a) $\sin \theta = \frac{1}{\csc \theta}$
d) $\alpha \approx 42^\circ$	24) 4.86	b) $\cos \theta = \frac{1}{\sec \theta}$
4) a) $\sin \theta = -\frac{21}{29}$	25) 75.96°	c) $\tan \theta = \frac{1}{\cot \theta}$
b) $\cos \theta = -\frac{20}{29}$	26) NOT POSSIBLE	d) $\cot \theta = \frac{1}{\tan \theta}$
c) $\theta \approx 226^\circ$	27) 150°	e) $\sec \theta = \frac{1}{\cos \theta}$
d) $\alpha \approx 46^\circ$	28) $\frac{7\pi}{18}$	f) $\csc \theta = \frac{1}{\sin \theta}$
5) a) $\sin \theta = -\frac{1}{7}$	29) $\frac{7\pi}{10}$	42) a) $\tan \theta = \frac{\sin \theta}{\cos \theta}$
b) $\cos \theta = -\frac{4\sqrt{3}}{7}$	30) 0	b) $\cot \theta = \frac{\cos \theta}{\sin \theta}$
c) $\theta \approx 188^\circ$	31) $\frac{-\sqrt{2}-2\sqrt{3}}{2}$	43) $\cos 60^\circ$
d) $\alpha \approx 8^\circ$	32) 0	44) $\tan 0^\circ$
6) $\sin \theta = \frac{\sqrt{2}}{2}$ $\sec \theta = -\sqrt{2}$	33) $\frac{\sqrt{2}-1}{2}$	45) $\csc \frac{\pi}{4}$
$\cos \theta = -\frac{\sqrt{2}}{2}$ $\csc \theta = \sqrt{2}$	34) $2+\sqrt{3}$	46) $\sin 45^\circ$
$\tan \theta = -1$ $\theta \approx 135^\circ$	35) a) 1	47) 477.7 ft
$\cot \theta = -1$ $\alpha \approx 45^\circ$	b) -1	48) 150 ft.
7) 45°	c) 0	49) 425.96 cm.
8) 60°	d) $\frac{\sqrt{3}}{2}$	50) 50 cm.
9) 45°	e) $\frac{1}{2}$	51) 41°
10) 330°	f) $\frac{\sqrt{3}}{3}$	52) $21,000$ Radians
11) $5\pi/6$	36) $-\frac{19\pi}{12}$	
12) $5\pi/3$	37) $\frac{3\pi}{5}$	

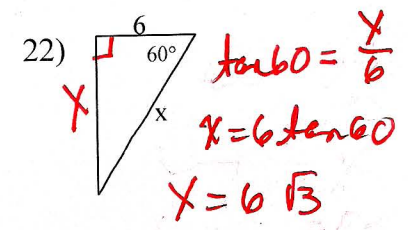
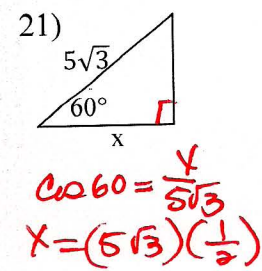
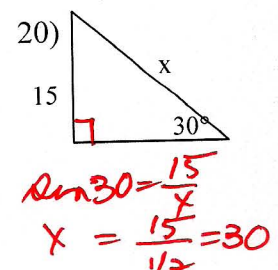
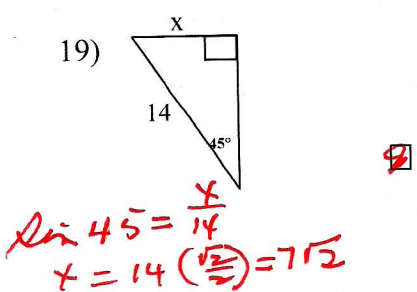
WORK



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



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



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

30) $\sin \frac{3\pi}{2} - \sec(15\pi) = (-1) - (-1) = 0$

31) $\cos \frac{5\pi}{4} + \tan \frac{5\pi}{3} = \frac{-\sqrt{2}}{2} + \frac{(-\sqrt{3})}{2} = \frac{-\sqrt{2}-2\sqrt{3}}{2}$

32) $\cot \frac{5\pi}{2} + \sin(-20\pi) = 0 + 0 = 0$

33) $\sin \frac{3\pi}{4} - \cos \frac{\pi}{3} = \frac{\sqrt{2}}{2} - \frac{1}{2} = \frac{\sqrt{2}-1}{2}$

34) $\csc \frac{5\pi}{6} + \tan\left(-\frac{5\pi}{3}\right) = 2 + \sqrt{3}$

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

VIII. Coterminal Angles/Definitions:

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

$\frac{24\pi}{12} - \frac{5\pi}{12} = \frac{19\pi}{12}$

37) Find the least positive angle coterminal 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) $\sin 30^\circ =$ _____ 44) $\cot \frac{\pi}{2} =$ _____ 45) $\sec \frac{\pi}{4} =$ _____ 46) $\cos 45^\circ =$ _____

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 3° from the horizontal (angle of depression = 3°). **To the nearest tenth**, how far away is Romeo from Juliet (on her balcony)?

DRAWING	WORK: INCLUDE SET UP AND WORK
	$\sin 3^\circ = \frac{25}{x}$ $x = \frac{25}{\sin 3}$ $x \approx 477.7 \text{ ft}$

- 48) The angle of elevation from a sailboat to the top of a lighthouse on the shore measures 25° . The sailboat is 322 ft away from the base of the lighthouse.

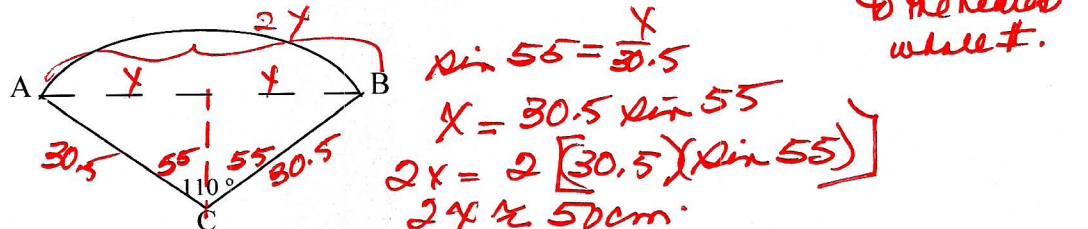
To the nearest foot, find the height of the lighthouse.

DRAWING	WORK: INCLUDE SET UP AND WORK
	$\tan 25^\circ = \frac{x}{322}$ $x = 322 \tan 25^\circ$ $x \approx 150.15 \text{ ft}$

- 49) Each leg of an isosceles triangle is 260 cm. long and each base angle measures 35° . Find the length of the base. *(to the nearest hundredth)*

DRAWING	WORK: INCLUDE SET UP AND WORK
	$\cos 35^\circ = \frac{x}{260}$ $x = 260 \cos 35^\circ$ $2x = 2(260 \cos 35^\circ)$ $2x \approx 425.96 \text{ cm.}$

- 50) A windshield wiper arm 30.5 cm. long pivots at point C and sweeps out an angle of 110° . 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
	$\theta^r = \frac{25.5}{35.7} \approx .7142857143$ $\frac{\pi}{180} = \frac{\text{Calc. ANS}}{x}$ $x = (180)(\text{Calc.}) \div \pi \approx 41^\circ$

- 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.

$$1 \text{ rev} = 2\pi$$

$$\theta^r = \frac{s}{r}$$

$$\theta^r = \frac{630,000}{30} = 21,000 \text{ Radians}$$

$$6.3 \text{ km} = 630,000 \text{ cm.}$$

