[IN-CLASS REVIEW (EXAM 1)]

DISCLAIMER: THIS REVIEW IS NOT A "PRACTICE EXAM" AND IS ONLY MEANT TO GET YOU STARTED ON YOUR OWN REVIEW! IT IS POSSIBLE FOR A QUESTION TO BE ON THE EXAM THAT IS UNLIKE ANYTHING ON THIS REVIEW — BUT REST ASSURED, I NEVER PUT ANYTHING ON THE EXAM THAT WE HAVEN'T TALKED ABOUT!

[1.] FIND A POSITIVE & NEGATIVE ANGLE THAT IS COTERMINAL W/ THE GIVEN ANGLE

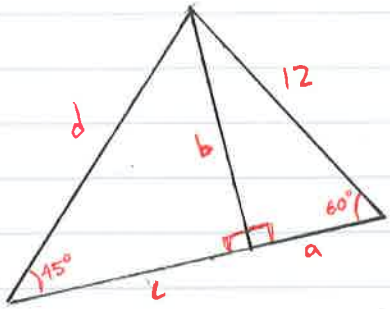
a) $112°$
b) $90°$
c) $\frac{4\pi}{3}$

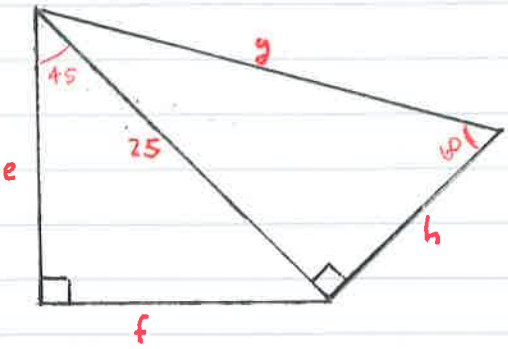
[2.] CLEVELAND, OHIO & MIAMI, FLORIDA HAVE ROUGHLY THE SAME LONGITUDE. THE LATITUDE OF CLEVELAND IS $41° 29' 57"$N WHEREAS THE LATITUDE OF MIAMI IS $25° 46' 26"$N. USE THE ARC LENGTH FORMULA W/ THE FACT THAT THE AVERAGE RADIUS OF THE EARTH IS 3963 MILES TO FIND THE DISTANCE BETWEEN THE TWO CITIES.

[3.] EACH OF THE 24 SATELLITES USE IN THE GPS IS LOCATED 16,526 MILES FROM THE CENTER OF THE EARTH AND HAS A NEARLY CIRCULAR ORBIT OF 12 HOURS. FIND THE ANGULAR SPEED OF EACH SATELLITE, THEN FIND THE LINEAR SPEED. ROUND TO THE NEAREST HUNDREDTH.

[4.] FIND THE AREA OF THE SECTOR BELOW

[5.] FIND EACH VARIABLE.





[6.] THE ANGLE OF ELEVATION OF THE SUN IS 35°. FIND THE LENGTH OF A SHADOW CAST BY A 30 FOOT 4 INCH TELEPHONE POLE.

[7.] FROM THE ROOF OF A BUILDING, 65 FEET ABOVE GROUND, THE ANGLE OF ELEVATION TO A NEARBY TALLER BUILDING'S ROOFTOP IS 47.8° WHILE THE ANGLE OF DEPRESSION TO THE BASE OF THE TALLER BUILDING IS 12.7°. FIND THE HEIGHT OF THE TALLER BUILDING.

[8.] FIND THE SIX TRIG FUNCTIONS FOR THE FOLLOWING ANGLE MEASUREMENTS (USE EXACT VALUES)

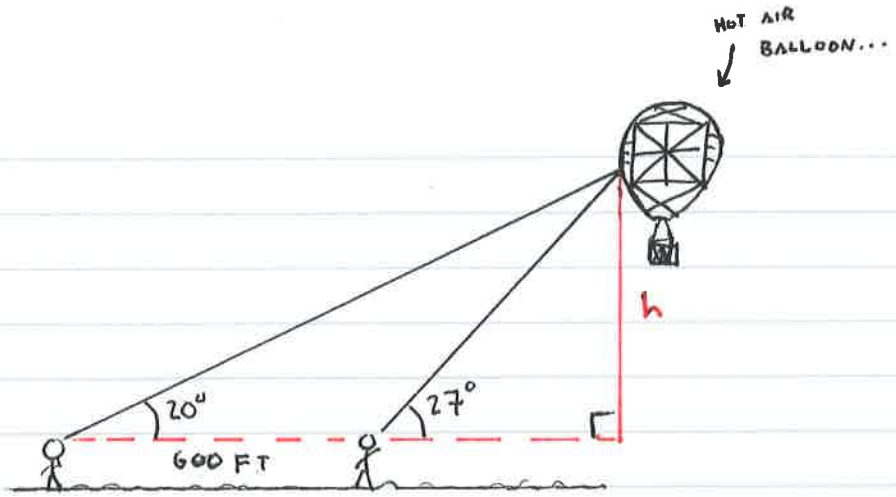
a) 0

b) $\frac{3\pi}{2}$

c) $\frac{11\pi}{6}$

d) $\frac{5\pi}{4}$

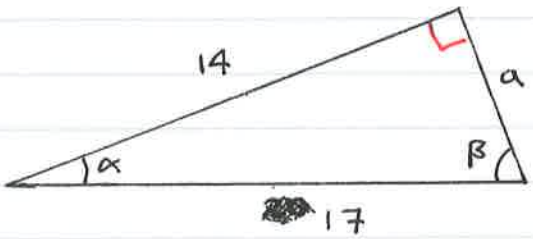
[9.]



TWO PEOPLE ARE LOOKING UPWARD AT A HOT AIR BALLOON. THE GUY FURTHER AWAY IS LOOKING UP AT ANGLE 20° & THE CLOSER GUY IS LOOKING UP AT ANGLE 27°. IF THEY ARE 600 FT APART, HOW HIGH IS THE BALLOON?

[10.] WHAT IS THE DOMAIN OF $f(x) = \arctan x$?

[11.] "SOLVE" THE TRIANGLE BELOW



(not to scale)

[12] DETERMINE THE VALUES OF THE SIX TRIG FUNCTIONS GIVEN:

$$\cos\theta = \frac{-8}{17} \quad \text{AND} \quad \tan\theta > 0$$

[13.] ROUGHLY SKETCH $p(x) = \cot x$

[14.] STATE THE AMPLITUDE, PERIOD, PHASE SHIFT, & V-SHIFT.

a) $f(t) = -2\sin(2t + \pi)$

b) $m(x) = \frac{1}{2}\cos\left(\frac{\pi}{2}(t-1)\right) - 2$

[15] SOLVE THE FOLLOWING...

a) $3\sin\theta = \frac{15}{13}$

b) $\sin^2\theta = 0.87$

c) $2\sec\theta + 3 = 18$

d) $\frac{1}{2}\csc\theta - 11 = 1.06$

[16.] FIND $\cos\theta$ IF $\theta = \sin^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)$

[17.] FIND $\sec(\sin^{-1}x)$.

[18.] SUPPOSE THAT A WEIGHT ON A STRING HAS INITIAL POSITION $s(0) = -5$ AND A PERIOD $P = 0.8$.

a) FIND A FUNCTION s GIVEN BY $s(t) = a\cos(2\pi Ft)$ THAT MODELS THE DISPLACEMENT OF THE WEIGHT.

b) FIND $s(1)$. IS THE WEIGHT AFTER 1 SECOND MOVING UP, DOWN, OR NEITHER?

[19.] A PIANO NOTE HAS FREQUENCY 25.5 AND AN INITIAL DISPLACEMENT $s(0) = 0.27$. USE $s(t) = a\cos bt$ TO FIND A MODEL OF THIS NOTE.

[20.] GRAPH THE FOLLOWING.

a) $f(t) = -2\sin\left(\frac{1}{2}(t-\pi)\right) + 1$

b) $y(t) = 1.5\cos(4(t + \pi/2))$

c) $k(t) = 9\sin(\pi x)$