

This lab is intended to review some of the things we have done so far. You are encouraged to work together. If necessary, attach additional paper but put your final answer on this paper. Your work will be graded on completeness, neatness, accuracy and punctuality. 20 pts

1) How many degrees are there between the two hands of the clock at 7:25? (the smaller angle) _____

2) A truck with 100 cm tires is traveling down the hi-way. The wheels are rotating at 480 rpm. A rock comes loose from the tire. How fast is the rock moving toward your windshield (m/sec)?
 $v =$ _____

3) A 12 cm (dia) reel has fishing line wound around which does not add appreciably to the diameter of the reel.



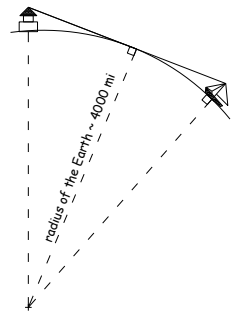
(a) How many degrees must be wound on the reel to take-in 10 m of line? $a =$ _____

(b) If the reel is turning at 900 rpm, what is the speed of the fish in m/sec? $v =$ _____

4) A Widow's walk is 115' above sea level. (assume the Earth's radius \approx 4000 mi)

(a) How far (line of sight) to the horizon would you see from the Widow's Walk?
 distance = _____

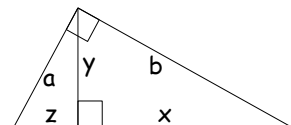
(b) Suppose a ship has a 32' mast. How far out the mast tip first be visible?
 distance = _____



BONUS What is the actual distance (curved distance) on the Earth? $s =$ _____

5) $a = 50, b = 130$. Find x, y, z

$x =$ _____ $y =$ _____ $z =$ _____

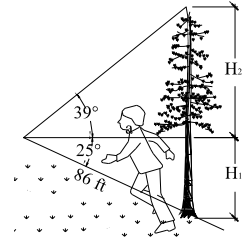


6a) $x =$ _____

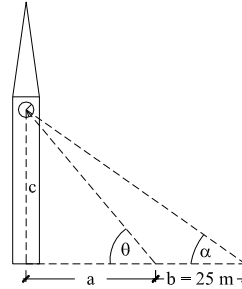
6b) $x =$ _____

6c) $x =$ _____

7) Find the height of the tree

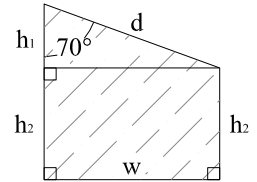


8) While Lydia is walking toward a tall Clock Tower she measures the angle (from the horizontal) to the clock at $\alpha = 42^\circ$. After she moves 25 m closer, she measures the angle again. It now measures $\theta = 46^\circ$. How high is the clock above the ground?



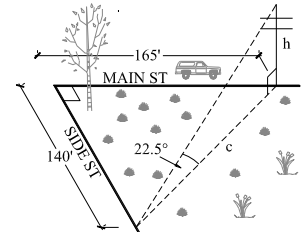
9) A trapezoid window has a width of 6', a height ($h_1 + h_2$) of 7' 6" and the interior angle of 70°

(a) Find its area.



(b) Find its perimeter.

10) A telephone pole is located 165' down a main street. Perpendicular to that main street is a side street. 140' down that side street a sighting is taken to the top of the pole @ 22.5° . How tall is the pole?



BONUS

Find the height of the tree

