

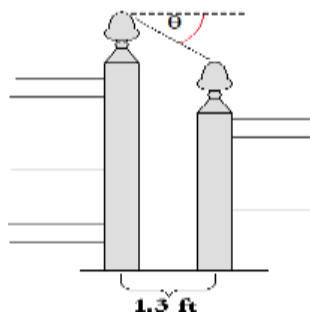
10/14/20 SHOW ALL WORK!!! DO YOUR OWN WORK!!! DO NOT USE THE MAC TO DO THE WORK!!

(1) Verify the identities by working down one side or the other, or working down both sides separately.

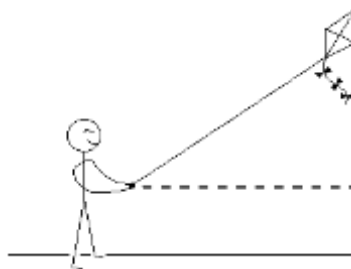
(a) $\cot^2(\theta) - \cos^2(\theta) = \cot^2(\theta)\cos^2(\theta)$

(b) $\frac{1 + \cos(t)}{\sin(t)} = \frac{\sin(t)}{1 - \cos(t)}$

- (2) **Fence Posts.** Two adjoining neighbors have similar fencing surrounding their properties but at different heights. The post of the different fences are separated by 1.3 feet. The angle of depression θ from the top of the taller post to shorter post is 49° . **How many feet** would the shorter posts have to be **raised** to match the height of the taller posts? [Do not just write down an answer. Set up an equation and solve that equation.]



- (3) **Height of a Kite.** A person flying a kite holds the string 3 feet above level ground. The string of the kite is taut and makes an angle of elevation of 27° with the horizontal. **Approximate** the height of the kite above the ground if 113 feet of string is let out. [Do not just write down an answer. Set up an equation and solve that equation.]



Extra Credit:

(1) **Verify** the identity.

$$(\sin(\beta) + \cos(\beta))^2 - 2 \sin(\beta) \cos(\beta) = 1$$

(2) **Verify** the identity.

$$\ln(\sec(\gamma)) = -\ln(\cos(\gamma))$$

(3) If there is a bright star in nearly any direction of the sky that you can point to, then why doesn't all that light make the night sky bright?