Practice Worksheet: Proving Trig Identities

1. Prove the following identities. (Be sure to organize your proof as shown in the Online Lecture Notes and class notes videos.) This means that you should start your proof by writing one side of the identity and then use equal signs between equivalent expressions until you obtain the other side of the identity. You should only include one step on each line and you should align your equal signs on the left of each step. Compare your proofs with those given in the solutions to make sure that you are using the correct organization and technique.)

a. $\tan(x)\sec(x) = \sin(x)\sec^2(x)$

b. $\csc(t) - \sin(t) = \cot(t)\cos(t)$

c. $\dfrac{\sec(\theta)}{\sin(\theta)} - \tan(\theta) = \cot(\theta)$

d. $\tan(\theta) = \dfrac{\csc(\theta)}{\cos(\theta)} - \cot(\theta)$

e. $2\sec^2(x) = \dfrac{1}{1-\sin(x)} - \dfrac{1}{1+\sin(x)}$

f. $\dfrac{1}{1-\cos(x)} - \dfrac{1}{1+\cos(x)} = 2\cot(x)\csc(x)$

g. $\sec(\theta) + \tan(\theta) = \dfrac{\cos(\theta)}{1 - \sin(\theta)}$

h. $\cot(A) = \csc(A)\sec(A) - \tan(A)$