In this activity, you will prove trigonometric identities and then verify each proof by graphing. An example for you to follow is given below.

Problem 1 – Proof 1

On page 1.5, the left side of the equation has been graphed as **f1**(*x*).

1. Graph the right side of the equation as **f2**(*x*). Do the graphs coincide?

Problem 2 – Proof 2

2. Prove $(1+\cos(x))\cdot(1-\cos(x))=\sin^2(x)$.

Problem 3 – Proof 3

3. Prove $\sin(x)\cdot\cot(x)\cdot\sec(x)=1$.

Problem 4 – Proof 4

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

Problem 5 – Proof 5

5. Prove $\tan(x)+\cot(x)=\sec(x)\cdot\csc(x)$.

Problem 6 – Proof 6

6. Prove $\dfrac{\sin^2(x)-49}{\sin^2(x)+14\sin(x)+49}=\dfrac{\sin(x)-7}{\sin(x)+7}$.