***Lecture* *Eight* – Identities and Solving Trigonometric**

***Section* 8.1 - Proving Identities**

***Reciprocal Identities***

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |

***Ratio Identities***

|  |  |
| --- | --- |
|  |  |

***Pythagorean Identities***











***Example***

Write  in terms of sin*θ* and cos*θ*, and then simplify.

***Solution***



***Example***

Add 

***Solution***

 

***Example***

Write:  in terms of 

***Solution***









***Example***

Prove: 

***Solution***







 ***√***









***Example***

Prove: 

***Solution***





 ***√***

**Guidelines for Proving Identities**

1. Work on the complicated side first (more trigonometry functions)
2. Look for trigonometry substitutions.
3. Look for algebraic operations
4. If not always change everything to sines and cosines
5. Keep an eye on the side you are not working.

***Example***

Prove 

***Solution***

 

 





 ***√***

***Example***

Prove: 

***Solution***

 

 

 ***√***

***Example***

Prove: 

***Solution***





 



 

 ***√***

***Example***

Prove: 

***Solution***













 ***√***

***Example***

Prove 

***Solution***







 ***√***

***Example***

Show that  is not an identity by finding a counterexample

***Solution***







 ***√***

***Exercises Section* 8.1 – Proving Identities**

(**1−80**) Prove the identity

|  |  |  |
| --- | --- | --- |
|  |  | |
|  | |  |