

Review Test 3 Chapters 6, 7, and 10

Study the following:

CHAPTER 6

- Handout Chapter 6
- Know the following formal proofs:
 - o Section 6.2 – Theorem 6.6, theorem 6.7
 - o Section 6.3 – Theorem 6.19
- Know the proofs of the following theorems (informal OK):
 - o Section 6.2 – Theorem 6.13, theorem 6.15, theorem 6.20
 - o Section 6.6 – Theorem 6.37, theorem 6.38
- Review the following homework problems:
 - o Section 6.1 - #21 – 24, 26, 27, 30, 31
 - o Sections 6.2 & 6.3 – all homework problems
 - o Section 6.4 – #19,20, 22

CHAPTER 7

- Review the following homework problems:
 - o Section 7.2 - #19, 20, 26
 - o Section 7.3 – all homework problems

CHAPTER 10

- Handout Chapter 10
- Simplifying expressions (see exercises done in class + review)
- Proving identities (see exercises done in class + review)

Simplify the following expressions:

$$1) (1 + \sin x)(\sec x - \tan x)$$

$$2) \frac{\sin a}{\cos a} + \frac{\cos a}{1 + \sin a}$$

$$3) \cos^3 x + \sin^2 x \cos x$$

$$4) \frac{\cos \theta \sec \theta}{\cot \theta}$$

$$5) \frac{\sec^2 \theta - 1}{\sec^2 \theta}$$

$$6) \frac{\sin x}{\csc x} + \frac{\cos x}{\sec x}$$

$$7) \frac{1 + \sin \alpha}{\cos \alpha} + \frac{\cos \alpha}{1 + \sin \alpha}$$

$$8) \frac{2 + \tan^2 a}{\sec^2 a} - 1$$

$$9) \frac{1 + \cot A}{\csc A}$$

Answers

$$1) \cos x$$

$$2) \sec a$$

$$3) \cos x$$

$$4) \tan \theta$$

$$5) \sin^2 \theta$$

$$6) 1$$

$$7) \frac{2}{\cos \alpha} \text{ OR}$$

$$2 \sec \alpha$$

$$8) \cos^2 a$$

$$9) \sin A + \cos A$$

Prove the following identities:

$$1) \cos \theta (\sec \theta - \cos \theta) = \sin^2 \theta$$

$$2) 2 \tan \alpha \sec \alpha = \frac{1}{1 - \sin \alpha} - \frac{1}{1 + \sin \alpha}$$

$$3) \frac{1}{1 - \sin \theta} = \sec^2 \theta + \tan \theta \sec \theta$$

$$4) \frac{1 + \cos \theta}{\cos \theta} = \frac{\tan^2 \theta}{\sec \theta - 1}$$

$$5) \sin a \cot a = \cos a$$

$$6) \frac{\tan x}{\sec x} = \sin x$$

$$7) \frac{\cos x}{\sec x} + \frac{\sin x}{\csc x} = 1$$

$$8) (\sin x + \cos x)^2 = 1 + 2 \sin x \cos x$$

$$9) \frac{1 - \sin x}{1 + \sin x} = (\sec x - \tan x)^2$$

$$10) \sin \theta + \cos \theta \cot \theta = \csc \theta$$