

Name: _____

SHOW ALL YOUR WORK FOR EACH PROBLEM TO GET FULL CREDIT.
PLEASE BE NEAT.

Direction: Read through sections 6.1 and 6.2 in your book and answer the following questions.

1. List and label the *Reciprocal* and the *Pythagorean* identities. (Section 5.2)

2. Find and simplify the followings (without using a calculator)

a) $\frac{2}{3} + \frac{5}{7}$

b) $\frac{5}{7} + 2$

c) $\frac{5}{7} \cdot \frac{5}{7}$

d) $\frac{5}{7} \cdot \frac{7}{5}$

e) $\frac{5}{7} \div \frac{3}{4}$

3. Factor out the following expressions.

a) $x(5x + 4) + 2(5x + 4)$

b) $x^3 - 4x^2 - 2x + 8$

c) $x^2 - 100$

4. Verify the identity by using question #1(Section 6.1)

$$\csc \theta \cos \theta = \cot \theta$$

5. Identify the mistake made in solving the following equations. Write a sentence explaining why it is wrong:

a: $\frac{a+b}{x+b} = \frac{a}{x}$

Mistake that was made:

b: $\frac{x}{\left(\frac{a}{b}\right)} = \frac{xa}{b}$

Mistake that was made:

c: $(a^3)^2 = a^5$

Mistake that was made:

d: $(a+b)^2 = a^2 + b^2$

Mistake that was made:

6. a) Multiply $(a-b)(a+b)$ to show that $(a-b)(a+b) = a^2 - b^2$.

- b) How does solving (a) help you to simplify $\frac{\sin^2(x) - \cos^2(x)}{\sin(x) + \cos(x)}$? Use factoring to simplify the expression (Section 6.1).

7. a. Write the ***sum and difference formulas*** for sine and cosine functions. (Section 6.2)

- b. Give an example to show why $\cos(\alpha + \beta) = \cos(\alpha) + \cos(\beta)$ is not true.