Name: ______________________________________

Using Fundamental Identities

1) Simplify each expression

1) (3 – 3sinx)(3 + 3sinx)

2) $\sec^2 x \tan^2 x + \sec^2 x$

3) $\frac{9}{\tan x + \sec x}$

4) $(\sin x + 2\cos x)^2 - (\sin x - 2\cos x)^2$

5) $\frac{1}{1+\cos\alpha} - \frac{1}{1-\cos\alpha}$

6) $\cos^4\alpha - 2\cos^2\alpha + 1$

2) Simplify each of the following:

1) $\sec\theta - \sec\theta\sin^2\theta$

2) $\sin\theta\sec\theta\cot\theta$

3) $\sin^2\theta\left(1+\cot^2\theta\right)$

4) $\sin^2\theta\sec^2\theta - \sec^2\theta$

5) $\tan^2\theta\cos^2\theta + \cot^2\theta\sin^2\theta = 1$

6) $\tan\theta + \frac{\cos\theta}{1+\sin\theta}$

3) If $\cos \varphi = \frac{1}{2}$ and φ terminates in quadrant IV, find $\sin\varphi$, $\tan\varphi$, and $\sec\varphi$

4) Evaluate: $\sqrt{25+x^2}$ if $x = 5\tan\theta$, knowing that θ is Q3

5) Show that $\sin(A+B) \neq \sin A + \sin B$ by substituting $30°$ for A and $60°$ for B in both expressions

6) If $\sin\theta = \frac{\sqrt{2}}{2}$ and $\tan\theta = 1$. Find all the trigonometric functions of θ and the value of the angle θ

7) If sin A = $3/4$ and A is an acute angle, calculate cos A and tan A.

8) Given: 15 cot A = 8, find all the possible values of sin A and sec A.

9) Given $\sec\theta = 13/12$, calculate all other trigonometric ratios knowing that θ is in QIV

10) If $\cot\theta = \frac{7}{8}$, and θ is in $QIII$, evaluate:

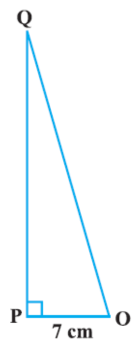
1) $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$

2) $\cot^2\theta$

11) Express the ratios cos A, tan A and sec A in terms of sin A.

12) If ∠A and ∠B are acute angles such that cos A = cos B, then show that ∠A = ∠B.

13) In △ OPQ, right-angled at P, OP = 7 cm and OQ – PQ = 1 cm. Determine the values of sin Q and cos Q.



14) In a right triangle ABC, right-angled at B, if tan A = 1, then verify that 2 sin A cos A = 1.