Homework 6.3 – Other Trigonometric Functions

1. **(1 pt) alfredLibrary/AUCI/chapter6/lesson3/quiz/question1.pg**
Express the following trigonometric functions in terms of sine and cosine. You should memorize these formulas.

$\tan(x) =$ _____

$\cot(x) =$ _____

$\sec(x) =$ _____

$\csc(x) =$ _____

2. **(1 pt) alfredLibrary/AUCI/chapter6/lesson3/trigsimplify1pet.pg**
Rewrite each expression as a single trigonometric function. (Hint: First rewrite each trig function in terms of sine and/or cosine.)

(a) $\tan(x)\cos(x) =$ _____

(b) $\dfrac{1}{\sin(x)\cos(x)} - \dfrac{1}{\tan(x)} =$ _____

3. **(1 pt) alfredLibrary/AUCI/chapter6/lesson3/trigquotient1pet.pg**
If $h(x) = \dfrac{\cot(7x)}{\frac{1}{\sqrt{x^{13}}}}$, then $h(x) = \dfrac{f(x)}{g(x)}$ where

$f(x) =$ _____

and

$g(x) =$ _____.

By the quotient rule,

$h'(x) =$ _____ – _____ _____

4. **(1 pt) alfredLibrary/AUCI/chapter6/lesson3/trigderiv6pet.pg**
(a) If $f(x) = \tan x^2$, then $f'(x) =$ _____.

(b) If $g(x) = \tan^2 x$, then $g'(x) =$ _____.

5. **(1 pt) alfredLibrary/AUCI/chapter6/lesson3/lhopitals1pet.pg**
(a) $\lim_{\theta \to 0} 7\sin(\theta) =$ _____

(b) $\lim_{\theta \to 0} (\theta + 4\tan(\theta)) =$ _____

(c) According to parts (a) and (b), we can use L'Hopital's rule on the following limit:

$\lim_{\theta \to 0} \dfrac{7\sin(\theta)}{\theta + 4\tan(\theta)} = \lim_{\theta \to 0}$ _____ _____

(**Note:** Type 'theta' for θ.)

6. **(1 pt) alfredLibrary/AUCI/chapter6/lesson3/trigintegral7pet.pg**
Evaluate each integral.

(HINT for (a): You must first rewrite the integrand as a single trig function.)

(a) $\displaystyle\int \frac{1-\sin^2 x}{\cos x}\,dx =$ _____

(b) $\displaystyle\int_0^{\pi/12} \sec\theta\tan\theta\,d\theta =$ _____

(c) $\displaystyle\int \csc^2(4.5x+0.9)\,dx =$ _____

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