Name_____ Date_____ Period_____

TEST: 5.1-5.6A—NO Calculator Permitted

Part I—Multiple Choice: Put the capital letter of the correct answer in the blank beside the question number.

_____ 1. What is the period of the following function? $y = 2 - 9\tan\left(\frac{4\pi}{7} + \frac{3\pi}{5}x\right)$

(A) $\frac{7}{2}$ (B) $\frac{10}{3}$ (C) $\frac{4}{7}$ (D) $\frac{7}{4}$ (E) $\frac{5}{3}$

_____ 2. The function $y = \cot x$ has the same domain as the function

(A) $\sin x$ (B) $\csc x$ (C) $\tan x$ (D) $\sec x$ (E) $\cos x$

_____ 3. If $\sec\theta = -\frac{2\sqrt{3}}{3}$, then which of the following angles could θ be?

I. $\frac{5\pi}{6}$

II. $\frac{4\pi}{3}$

III. $\frac{13\pi}{6}$

(A) I only (B) II only (C) III only (D) I and II only (E) I, II, and III

_____ 4. Find the domain of $f(x) = -5\csc\left(\frac{3\pi}{4}x - \frac{\pi}{3}\right) + 1$ for $n \in \mathbb{Z}$.

(A) $\left\{x \middle| x \neq \frac{4}{9} + \frac{4}{3}n\right\}$ (B) $\left\{x \middle| x \neq \frac{4}{9} + \frac{2}{3}n\right\}$ (C) $\left\{x \middle| x \neq \frac{\pi}{3} + \frac{4}{3}n\right\}$ (D) $\left\{x \middle| x \neq \frac{2}{3} + 3n\right\}$ (E) $\left\{x \middle| x \neq \frac{10}{9} + \frac{4}{3}n\right\}$

_____ 5. What is the range of $y = 7 - 3\sec(6 - 2\pi x)$?

(A) $\{y | 4 \le y \le 10\}$ (B) $\{y | -4 \le y \le 10\}$ (C) $\{y | y \le -4 \text{ or } y \ge 10\}$ (D) $\{y | y \le 4 \text{ or } y \ge 10\}$ (E) all reals

_____ 6. For what angle, $0 \le \theta < 2\pi$, does $\sec\theta = \csc\theta$?

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{3}$ (D) $\frac{\pi}{2}$ (E) No such angle exists

_____ 7. If $\sin\pi = A$, $\tan A = B$, then what is $\cot B =$

(A) 0 (B) 1 (C) $\frac{\sqrt{2}}{2}$ (D) $\frac{\pi}{4}$ (E) DNE

_____ 8. For which of the following functions does $f(-x) = f(x)$?

I. $f(x) = \cos x$

II. $f(x) = \sec x$

III. $f(x) = \cot x$

(A) I only (B) II only (C) III only (D) I and II only (E) II and III only

_____ 9. Find the domain of $f(x) = 3\tan\left(\frac{\pi}{4} + 4\pi x\right) + 5$ for $n \in \mathbb{Z}$.

(A) $\left\{x \middle| x \ne \frac{1}{16} + \frac{1}{2}n\right\}$ (B) $\left\{x \middle| x \ne \frac{3}{16} + \frac{1}{4}n\right\}$ (C) $\left\{x \middle| x \ne \frac{1}{16} + \frac{1}{4}n\right\}$ (D) $\left\{x \middle| x \ne \frac{3}{16} + \frac{1}{2}n\right\}$ (E) all reals

Part II—Short Answer: Using correct notation, and giving simplified, exact answers, for each of the following,

10. $f(x) = -9 + 2\sec\left(\frac{\pi x}{2} - \pi\right)$

(a) Put $f(x)$ into standard transformation form. ELIMINATE ANY NEGATIVE *B* VALUE BY USING THE SYMMETRY OF THE FUNCTION!!!

(b) Find the Period, *P*, of $f(x)$.

(c) Find the Range, *R*, of $f(x)$.

(d) Find the Domain, *D*, of $f(x)$.

11. $g(x)=5\cot\left(\frac{5}{2}-\frac{5\pi}{3}x\right)-8$

(a) Put $g(x)$ into standard transformation form. ELIMINATE ANY NEGATIVE *B* VALUE BY USING THE SYMMETRY OF THE FUNCTION!!!

(b) Find the Period, *P*, of $g(x)$.

(c) Find the Range, *R*, of $g(x)$.

(d) Find the Domain, *D*, of $g(x)$.