Name_____ Date_____ Period_____

TEST: 5.1-5.7 B—NO Calculator Permitted

Part I: Multiple Choice

_____ 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 $y =$

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

_____ 3. If $f(x) = \arccos x$, find $f(-0.5)$?

(A) $\frac{5\pi}{6}$ (B) $\frac{2\pi}{3}$ (C) $-\frac{\pi}{6}$ (D) $-\frac{\pi}{3}$ (E) DNE

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

_____ 6. $\sec(\arctan 3x^2) =$

(A) $\frac{\sqrt{1+9x^4}}{3x^2}$ (B) $\frac{\sqrt{1+3x^4}}{3x^2}$ (C) $\frac{\sqrt{1-9x^4}}{3x^2}$ (D) $\sqrt{1+9x^4}$ (E) $\sqrt{1+3x^4}$

_____ 7. $\text{Arcsin}\left(\sin\frac{18\pi}{13}\right) =$

(A) $\frac{5\pi}{13}$ (B) $\frac{18\pi}{13}$ (C) $\frac{\pi}{13}$ (D) $-\frac{5\pi}{13}$ (E) $-\frac{\pi}{13}$

_____ 8. $\csc\left(\tan^{-1}\frac{4}{3}\right) =$

(A) $\frac{5}{4}$ (B) $\frac{5}{3}$ (C) $\frac{3}{4}$ (D) $\frac{4}{5}$ (E) DNE

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

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

_____ 10. $\tan^{-1}(\cos\pi)=$

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

_____ 11. $\arccos\left(\cot\left(\sin^{-1}(-1)\right)\right)=$

(A) $\frac{\pi}{2}$ (B) 0 (C) π (D) $\frac{3\pi}{4}$ (E) DNE

_____ 12. $\csc\left(\arctan\sqrt{3}\right)=$

(A) $\frac{\sqrt{3}}{2}$ (B) $\frac{1}{2}$ (C) 2 (D) $\frac{2\sqrt{3}}{3}$ (E) DNE

_____ 13. $\cot\left(\tan^{-1}\frac{1}{1000}\right)=$

(A) $\frac{1}{1000}$ (B) 1000 (C) 2 (D) $\frac{53\pi}{4}$ (E) DNE

Part II: Short Answer

14. For the given algebraic expression, find a decomposition into a trig function of an inverse trig function of a ratio. Show the work (TRIANGLE) that leads to your answer. BOX your final answer.

$$\frac{\sqrt{4-x^4}}{x^2}$$