Precalculus Test 5:
Trig Graphs & Equations

Name _____

NO CALCULATOR

Form B

Matching (2 points each)
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____
10. ____
11. ____
12. ____
13. ____
14. ____
15. ____

Free Response

Final Grade
(% out of 60 points)

16. Given these equations, state period, phase shift and vertical shift. (6 pts)

$h(x) = \tan(2x + \frac{\pi}{4}) + 3$

Period _____

Phase Shift _____

Vertical Shift _____

Period _____

Phase Shift _____

Vertical Shift _____

17. Write the single function for the tangent curve which has undergone the following transformations: (combine all the information into one function)

Amplitude $= \frac{3}{4}$ x-axis reflection Period $= 3\pi$ Phase shift of $\pi/3$ radians

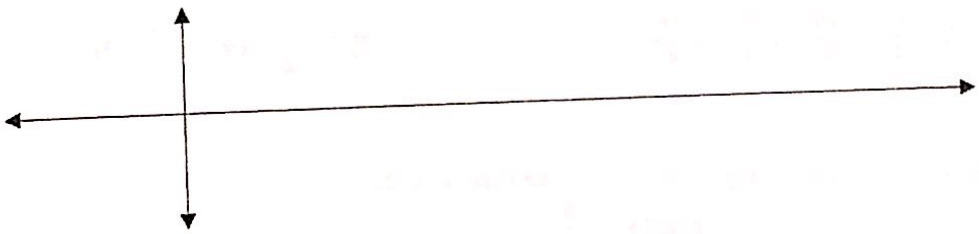
f(x) = _____ (4 pts)

18. Give the domain and range in proper interval notation of: $f(x) = 3\sin(x + \pi/2) + 5$

Domain: _____ (1 pt) Range: _____ (1 pt)

19. Graph one period of the following function. Be sure to label your minimum and maximum y-axis values, as well as your x-axis start/stop values. (4 pts)

$f(x) = -2\sec(\frac{1}{3}x - \pi/6) + 1$



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FORM B

Precalculus Unit 5 Test: Graphs of Trigonmetric Functions

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the exact value of the real number y.

1) $y = \sin^{-1}(-0.5)$ 1) _____

A) $\frac{\pi}{3}$ B) $\frac{11\pi}{6}$ C) $-\frac{\pi}{3}$ D) $-\frac{\pi}{6}$

2) $y = \text{arcsec}(1)$ 2) _____

A) $-\pi$ B) 0 C) π D) $\frac{\pi}{2}$

3) $y = \cot^{-1}(1)$ 3) _____

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

Solve for x in the given interval.

4) $\csc x = 2, 0 \le x \le \frac{\pi}{2}$ 4) _____

A) $\frac{\pi}{3}$ B) $\frac{\pi}{4}$ C) $\frac{5\pi}{6}$ D) $\frac{\pi}{6}$

5) $\sec x = -2, \pi \le x \le \frac{3\pi}{2}$ 5) _____

A) $\frac{7\pi}{6}$ B) $\frac{4\pi}{3}$ C) $\frac{5\pi}{4}$ D) $\frac{2\pi}{3}$

Find the zeros of the function in the interval $[-2\pi, 2\pi]$.

6) $f(x) = -4 \sin 2x$ 6) _____

A) $\pm\frac{\pi}{2}, \pm\frac{3\pi}{2}$ B) $0, \pm\pi, \pm 2\pi$

C) $\pm\frac{\pi}{4}, \pm\frac{3\pi}{4}, \pm\frac{5\pi}{4}, \pm\frac{7\pi}{4}$ D) $0, \pm\frac{\pi}{2}, \pm\pi, \pm\frac{3\pi}{2}, \pm 2\pi$

7) Solve the equation giving all solutions on the interval $[0, 2\pi)$: 7) _____

$$\sin 2x = \frac{\sqrt{3}}{2}$$

A) $\pi/3, \pi/6, 7\pi/6, 4\pi/3$ B) $\pi/3, 2\pi/3, 4\pi/3, 2\pi$

C) $\pi/3, 2\pi/3$ D) $\pi/6, 7\pi/6$

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8) $\sin^{-1}(\sin \frac{5\pi}{6})$

A) $-\pi/6$ B) $\pi/6$ C) 0 D) $5\pi/6$ 8) _____

9) Which pair of functions have the same domain?

A) sec x and cot x B) csc x and cot x C) cos x and cot x D) sin x and tan x 9) _____

10) What's the maximum value of this function: $y = -4\cos(2x - 50) + 6$? 10) _____

A) 2 B) 4 C) 10 D) 6

11) Solve the equation giving the principle values: 11) _____

$\sin^2 x - 1 = 0$

A) $-\frac{\pi}{2}$ and $\frac{\pi}{2}$ B) $\frac{\pi}{2}$ and $\frac{3\pi}{2}$ C) $\frac{\pi}{2}$ D) $-\frac{\pi}{2}$

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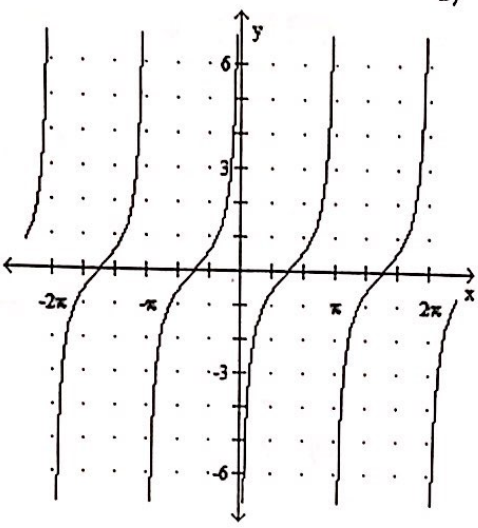
Match the function with its graph.

12) 1) $y = -\csc x$ 2) $y = -\sec x$
3) $y = -\tan x$ 4) $y = -\cot x$

12) _____

A)



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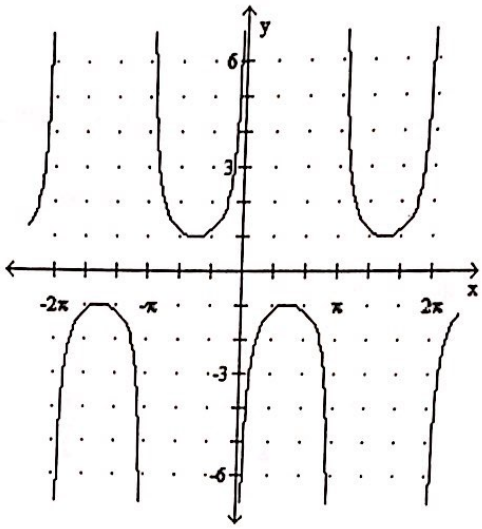
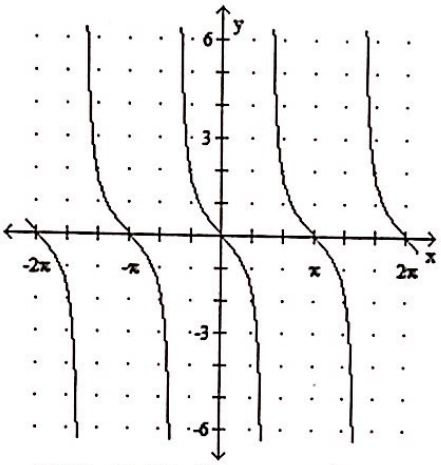
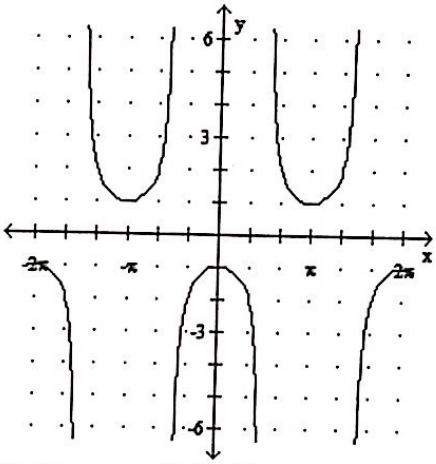


C)



D)



A) 1A, 2B, 3C, 4D B) 1C, 2A, 3B, 4D C) 1B, 2D, 3C, 4A D) 1A, 2D, 3C, 4B

Describe the transformations required to obtain the graph of the function f(x) from the graph of the function g(x).

13) $f(x) = -2\cos\frac{\pi x}{4}$; $g(x) = \cos x$

13) _____

A) Horizontal stretch by a factor $\frac{4}{\pi}$, vertical stretch by a factor of 2, reflection across y-axis

B) Horizontal stretch by a factor $\frac{4}{\pi}$, vertical stretch by a factor of 2, reflection across x-axis

C) Horizontal shrink by a factor $\frac{\pi}{4}$, vertical stretch by a factor of 2, reflection across x-axis

D) Horizontal shrink by a factor $\frac{\pi}{4}$ vertical shrink by a factor of $\frac{1}{2}$, reflection across y-axis

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Find the exact value of the composition.

14) $\arccos[\sin(\pi/6)]$ 14) _____

A) $\frac{\sqrt{3}}{2}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{3}$ D) $\frac{1}{2}$

Select the functions that have identical graphs.

15) (i) $y = \cos x$ 15) _____

(ii) $y = -\sin(x - \pi)$

(iii) $y = \cos\left(x - \frac{\pi}{2}\right)$

A) ii and iii B) i, ii and iii C) i and ii D) i and iii

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