Practice Quiz Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trig Identities Period\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_

I. Fill in the blank to illustrate your knowledge of trigonometric identities.

1. Using even/odd sin(−x) = \_\_\_−sin x\_\_\_\_\_\_

2. sin(a + b) = \_sin (a)cos (b) + cos (a)sin(b)\_\_\_\_\_\_\_\_

3. Using cofunctions csc = \_\_sec θ\_\_\_\_\_\_\_\_

4. cos 2θ = \_\_cos2θ – sin2θ OR 2cos2 θ – 1 OR 1 – 2sin2θ\_\_\_\_\_\_

5. Write a Pythagorean Identity that involves a tangent.\_\_tan2 θ + 1 = sec2θ\_\_\_\_\_\_\_\_

II. Evaluate each of the following expressions and simplify completely.

6. 2∙cos(x + 60°) = \_\_cos x − sin x\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2(cos x  cos 60° − sin x  sin 60°) = 2(cos x  (1/2) – sin x  (/2))

7. = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2

 1

 Let Tan-1(2) = a and Tan-1(1) = 45° . Then draw a .

 Sin(a – 45°) = sin a  cos 45° - cos a sin 45° =

 

8. tan 75° = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Tan(30° + 45°) =

 

 OR 

9. sec(Tan-1 2) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Let Tan-12= a. We drew a in problem #7. Sec a is the reciprocal of cos a, so sec a = 

10.  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 4 5 13 5

 a b

 -3 12

 Let . Draw these angles.

 

11. 4∙cos θ - 4sin θ = \_\_\_8cos (θ - 300°)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 This is a linear combination. Since  , we multiply and divide by 8 to get

 

 (Note: I actually got the 300° by plotting (4, -4) and finding the standard position

 angle through it.) (And you could have called that angle -60° or 5π/3 or –π/3.)

12. sec(90° − csc-1 3) = \_\_3\_\_\_\_\_ Since sec(90° - θ) = csc (θ), we have csc(csc-1(3)) = 3

13. Prove the identity: 2sec2 x – 2sec2 x ∙ sin2 x – sin2 x – cos2 x = 1



factor out the 2sec2θ and the -1

substitute Pythagorean identities

substitute reciprocal identity

use reciprocal identity

14. Solve this equation for x if 0 < x < 360° sin x ∙ cos 52° + cos x ∙ sin 52° = ½ .

 sin( x + 52°) = ½

 x + 52° = arcsin(½)

 x + 52° = {30° + 360°k or 150° + 360°k}

 x = {30° - 52° + 360°k or 150° - 52° + 360°k}

 x = {-22° + 360°k or 98° + 360°k} ⇒

 x = 338° or 98°

IV. If A terminates in quadrant III and tan A = ¾, and it B terminates in quadrant IV and cos B = 5/13, evaluate the following:

 -4 5

 A B

 -3 5 13 -12

15. sin(A – B) = sin A  cos B – cos A sin B =



16. sin (B/2) =

Note: If 270° < B < 360°, then 135° < B/2 < 180° and sin (B/2) > 0.

 If -90° < B < 0°, then -45° < B/2 < 0° and sin (B/2) < 0.

17. cos (2A) = cos2A – sin2A = 