MATH 244/GRACEY
CHAPTER 6.3-6.4 PRACTICE

Name_____

Find the exact value by using a sum or difference identity.

1) $\sin \frac{11\pi}{12}$

2) $\sin 15°$

Use trigonometric identities to find the exact value.

3) $\frac{\tan 65° + \tan 85°}{1 - \tan 65° \tan 85°}$

4) $\sin 265° \cos 25° - \cos 265° \sin 25°$

Use a sum or difference identity to find the exact value.

5) $\sin \frac{\pi}{15} \cos \frac{4\pi}{15} + \cos \frac{\pi}{15} \sin \frac{4\pi}{15}$

6) $\tan \frac{7\pi}{12}$

Using a sum or difference identity, write the following as an expression involving functions of x.

7) $\sin (360° + x)$

8) $\sin (x + 45°)$

Find the exact value of the expression using the provided information.

9) Find $\tan(A - B)$ given that $\sin A = -\frac{3\sqrt{13}}{13}$, with A in quadrant IV, and $\sin B = -\frac{\sqrt{10}}{10}$, with B in quadrant IV.

10) Find $\sin(B - C)$ given that $\sin B = -\frac{1}{2}$, with B in quadrant IV, and $\sin C = \frac{1}{4}$, with C in quadrant II.

Find the exact value.

11) $\tan 15°$

12) $\tan \frac{19\pi}{12}$

13) $\sin 105°$

Decide whether the expression is or is not an identity.

14) $\tan (A + \frac{\pi}{2}) = -\cot A$

15) $\sin (A + 4\pi) = \cos (A + \pi)$

Determine if the equation is an identity.

16) $\sin(x + y) - \sin(x - y) = 2 \cos x \sin y$

17) $\cos(x - y) \cos y - \sin(x - y) \sin y = \cos y$

Find the exact functional value.

18) If $\sin \theta = -\frac{4}{5}$ and $\cot \theta < 0$, then find $\cos 2\theta$.

19) If $\tan \beta = \frac{7}{24}$, and β terminates in quadrant III, then find $\cos 2\beta$.

Use an identity to write the expression as a single trigonometric function or as a single number.

20) $\cos^2 4x - \sin^2 4x$

21) $1 - 2 \sin^2 2x$

Write the function in terms of sin x and cos x.

22) $\sin 2x \cos 2x$

23) $\cos^2 2x - \sin^2 2x$

Decide whether the expression is or is not an identity.

24) $\sin 6x \tan 3x = 2 \sin^2 3x$

25) $\sin 2x = 2 \sin x$

Write the product as a sum or difference of trigonometric functions.

26) $2 \cos 9x \cos 4x$

27) $8 \cos 14° \cos 7°$

Rewrite the following as a product of trigonometric functions.

28) $\cos(8t^2) - \cos(5t^2)$

Write the product as a sum or difference of trigonometric functions.

29) $\cos 33° \sin 12°$

30) $2 \cos 6x \cos 2x$

31) $2 \sin 8x \sin 12x$

32) $10 \sin 43° \cos 100°$

33) $-4 \cos(-\theta) \sin(-5\theta)$

Rewrite the following as a product of trigonometric functions.

34) $\sin 3° + \sin 39°$

35) $\sin 18° - \sin 28°$

36) $\cos 15° - \cos 33°$

37) $\sin\left(\frac{\pi}{13}\right) + \sin\left(\frac{\pi}{2}\right)$

38) $\cos\left(\frac{\pi}{11}\right) - \cos\left(\frac{\pi}{2}\right)$

39) $\sin 5 + \sin 35$

40) $\sin(7t + 10) + \sin(2t + 5)$

41) $\sin\left(\frac{\pi}{11}\right) + \sin\left(\frac{\pi}{2}\right)$

Find the exact value by using a half–angle identity.

42) $\sin 165°$

43) $\sin 75°$

Determine all solutions of the equation in radians.

44) Find $\cos\frac{\theta}{2}$, given that $\sin\theta = \frac{1}{4}$ and θ terminates in $0 < \theta < 90°$.

45) Find $\cos\frac{\theta}{2}$, given that $\cos\theta = -\frac{3}{5}$ and θ terminates in $90° < \theta < 180°$.

Use an identity to write the expression as a single trigonometric function or as a single number.

46) $\frac{\sin 46°}{1 + \cos 46°}$

47) $\frac{\sin 76°}{1 - \cos 76°}$

Decide whether the expression is or is not an identity.

48) $\cot^2\frac{x}{2} = \frac{\sec x + 1}{\sec x - 1}$

49) $\tan^2\frac{x}{2} = \frac{1 - \cos x}{1 + \cos x}$

1) $\frac{\sqrt{2}(\sqrt{3}-1)}{4}$
2) $\frac{\sqrt{2}(\sqrt{3}-1)}{4}$
3) $-\frac{\sqrt{3}}{3}$
4) $-\frac{\sqrt{3}}{2}$
5) $\frac{\sqrt{3}}{2}$
6) $-2-\sqrt{3}$
7) sin x
8) $\frac{\sqrt{2}}{2}\cos x+\frac{\sqrt{2}}{2}\sin x$
9) $-\frac{7}{9}$
10) $\frac{\sqrt{15}-\sqrt{3}}{8}$
11) $2-\sqrt{3}$
12) $-2-\sqrt{3}$
13) $\frac{\sqrt{2}+\sqrt{6}}{4}$
14) Identity
15) Not an identity
16) Identity
17) Not an identity
18) $-\frac{7}{25}$
19) $\frac{527}{625}$
20) cos 8x
21) cos 4x
22) $2\sin x\cos^3 x-2\sin^3 x\cos x$
23) $\cos^4 x-6\sin^2 x\cos^2 x+\sin^4 x$
24) Identity
25) Not an identity
26) cos 13x + cos 5x
27) 4(cos 21° + cos 7°)
28) $-2(\sin(6.5t^2)\sin(1.5t^2))$
29) $\frac{1}{2}(\sin 45°-\sin 21°)$
30) cos 8x + cos 4x
31) cos 4x − cos 20x
32) 5[sin 143° + sin (−57°)]
33) 2(sin 6θ + sin 4θ)
34) 2(sin 21.0° cos (−18.0°))
35) 2(sin (−5.0°) cos 23.0°)
36) −2(sin 24.0° sin (−9.0°))
37) $2(\sin\left(\frac{15\pi}{52}\right)\cos\left(\frac{11\pi}{52}\right))$
38) $-2(\sin\left(\frac{13\pi}{44}\right)\sin\left(\frac{-9\pi}{44}\right))$
39) 2(sin 20.0 cos (−15.0))
40) $2(\sin\left(\frac{9t+15}{2}\right)\cos\left(\frac{5t+5}{2}\right))$
41) $2(\sin\left(\frac{13\pi}{44}\right)\cos\left(\frac{9\pi}{44}\right))$
42) $\frac{1}{2}\sqrt{2-\sqrt{3}}$
43) $\frac{1}{2}\sqrt{2+\sqrt{3}}$
44) $\frac{\sqrt{8+2\sqrt{15}}}{4}$
45) $\frac{\sqrt{5}}{5}$
46) tan 23°
47) cot 38°
48) Identity
49) Identity