

Review for
Sum/Difference & Double-Angle Test

Name _____
Date _____ Block ____

For #1-7, find the exact value.

1. $\sin 195^\circ$.

2. $\sin 165^\circ$.

3. $\tan \frac{13\pi}{12}$. $\left(\frac{13\pi}{12} = \frac{4\pi}{3} - \frac{\pi}{4}\right)$

4. $\sin \frac{\pi}{12}$. $\left(\frac{\pi}{12} = \frac{\pi}{4} - \frac{\pi}{6}\right)$

5. $\tan 255^\circ$

6. $\cos 285^\circ$

7. $\tan 240^\circ$

8. Simplify: $\frac{\tan 47^\circ - \tan 15^\circ}{1 + (\tan 47^\circ)(\tan 15^\circ)}$

9. Simplify: $\sin 5a \cos 4a + \cos 5a \sin 4a$

10. Simplify: $\cos 3x^2 \cos 4x - \sin 3x^2 \sin 4x$

11. Find the exact value: $\cos 146^\circ \cos 11^\circ + \sin 146^\circ \sin 11^\circ$

12. Simplify: $\frac{\tan(45) + \tan(30)}{1 - [\tan(45)][\tan(30)]}$

13. Simplify: $\sin\left(\frac{\pi}{2} + x\right)$

14. Simplify: $\sin\left(x - \frac{\pi}{4}\right)$

15. Simplify: $\tan\left(\frac{3\pi}{4} + \theta\right)$

16. Given $\cos x = -\frac{3}{7}$, find $\cos 2x$. (Assume $\pi < x < \frac{3\pi}{2}$)

17. Given $\cos \theta = -\frac{7}{11}$ and $\tan \theta < 0$, find $\sin 2\theta$.

18. Given $\sin \theta = \frac{-4}{5}$ and $\cos \theta > 0$, find $\tan 2\theta$.

19. Given $\tan x = -\frac{2}{7}$ find $\sin 2x$. (Assume $\frac{3\pi}{2} < x < 2\pi$)

20. Given a point on the terminal side of an angle, find the six trig values of the angle.

a. (-3,0)

b. (4,-3)

c. (-3,2)

d. (0,4)

e. (2,-1)

21. Find one acute angle, x , such that $\sin x = \frac{1}{2}$.

22. Determine the quadrant in which θ lies: $\sin \theta > 0$ and $\cos \theta < 0$.

23. Find the reference angle for $\theta = \frac{13\pi}{6}$.

24. Find the exact value of $\sec \frac{15\pi}{3}$.

Answer Key:

1. $\frac{\sqrt{2} - \sqrt{6}}{4}$	6. $\frac{-\sqrt{2} + \sqrt{6}}{4}$	11. $\frac{-\sqrt{2}}{2}$	16. $\frac{-31}{49}$	20. a. $\sin \theta = 0$ $\csc \theta = U$ $\cos \theta = -1$ $\sec \theta = -1$ $\tan \theta = 0$ $\cot \theta = U$	d. $\sin \theta = 1$ $\csc \theta = 2$ $\cos \theta = 0$ $\sec \theta = U$ $\tan \theta = U$ $\cot \theta = 0$
2. $\frac{\sqrt{6} + \sqrt{2}}{4}$	7. $\tan \frac{4\pi}{3} = \sqrt{3}$	12. $\tan 75^\circ$	17. $\frac{-14\sqrt{72}}{121}$	b. $\sin \theta = \frac{-3}{5}$ $\csc \theta = \frac{5}{-3}$ $\cos \theta = \frac{4}{5}$ $\sec \theta = \frac{5}{4}$ $\tan \theta = \frac{-3}{4}$ $\cot \theta = \frac{4}{-3}$	e. $\sin \theta = \frac{-\sqrt{5}}{5}$ $\csc \theta = -\sqrt{5}$ $\cos \theta = \frac{2\sqrt{5}}{5}$ $\sec \theta = \frac{\sqrt{5}}{2}$ $\tan \theta = \frac{-1}{2}$ $\cot \theta = -2$
3. $\frac{-1 + \sqrt{3}}{1 + \sqrt{3}}$	8. $\tan 32^\circ$	13. $\cos x$	18. $\frac{24}{7}$	c. $\sin \theta = \frac{2\sqrt{13}}{13}$ $\csc \theta = \frac{\sqrt{13}}{2}$ $\cos \theta = \frac{-3\sqrt{13}}{13}$ $\sec \theta = \frac{\sqrt{13}}{-3}$ $\tan \theta = \frac{2}{-3}$ $\cot \theta = \frac{-3}{2}$	21. $\frac{\pi}{6}$
4. $\frac{\sqrt{6} - \sqrt{2}}{4}$	9. $\sin(9a)$	14. $\frac{\sqrt{2}}{2}(\sin x - \cos x)$	19. $\frac{-28}{53}$		22. quadrant II
5. $\frac{\sqrt{3} - 1}{1 + \sqrt{3}}$	10. $\cos(3x^2 + 4x)$	15. $\frac{-1 + \tan \theta}{1 + \tan \theta}$			23. $\frac{\pi}{6}$
					24. -1