

## 2.1 Evaluating & Simplifying Trig Expressions

### Section 2.1

**Directions:** Fully simplify and rationalize all denominators. If your final answer contains several unlike terms that are fractions, give both answers (as separate fractions and one expression with a common denominator),

1)  $4 \sin 30^\circ$

2)  $(\tan 240^\circ)(\csc 225^\circ)$

3)  $\sin^2 60^\circ + \cos^2 60^\circ + \tan 225^\circ$

4)  $\cos 45^\circ + 2 \csc 315^\circ$

5)  $\frac{(\cot 150)(\sec 45)}{\csc 45}$

6)  $\sin 45^\circ + \tan 30^\circ$

7)  $\sec 330^\circ - \tan 120^\circ$

8)  $(\sec 45^\circ - \cot 210^\circ)^2$

9)  $\csc 45^\circ (\sec 30^\circ + \cot 150^\circ)$

10)  $2 \sin 270^\circ (\tan 45^\circ - \sin 30^\circ)$

11)  $\sin^2 45^\circ - 2\sin 135^\circ \cos 315^\circ + \cos^2 45^\circ$

12)  $(\cos 45^\circ)(\tan 330^\circ)(2 \sin 90^\circ)(\sec 330^\circ)$

13)  $\sin 30 (\csc 30^\circ + \tan 300^\circ)^2$

14)  $5(\cot 210^\circ - \sec 225^\circ)^2$

15)  $-\frac{\sec 240}{\tan 60}$

16)  $\frac{\cos 30}{\tan 30}$

17)  $2(4 \sin 60^\circ)^2 + \tan 225^\circ$

18)  $(2 \cos 225^\circ)^3$

19)  $\left(\frac{3 \csc 30}{2}\right)^2$

20)  $\left(\frac{\csc 45}{\tan 240}\right)^{-1}$

21)  $(\cos 90^\circ)(\cos 225^\circ)(\tan 315^\circ)(\sin 270^\circ)(\sec 330^\circ)$

1) 2      2)  $-\sqrt{6}$       3) 2      4)  $-\frac{3\sqrt{2}}{2}$       5)  $-\sqrt{3}$       6)  $\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{3}$  or  $\frac{3\sqrt{2}+2\sqrt{3}}{6}$       7)  $\frac{5\sqrt{3}}{3}$       8)  $5 - 2\sqrt{6}$

9)  $\frac{-\sqrt{6}}{3}$       10) -1      11) 0      12)  $-\frac{2\sqrt{2}}{3}$       13)  $\frac{7}{2} - 2\sqrt{3}$  or  $\frac{7-4\sqrt{3}}{2}$       14)  $25 + 10\sqrt{6}$       15)  $\frac{2\sqrt{3}}{3}$

16)  $\frac{3}{2}$       17) 25      18)  $-2\sqrt{2}$       19) 9      20)  $\frac{\sqrt{6}}{2}$       21) 0