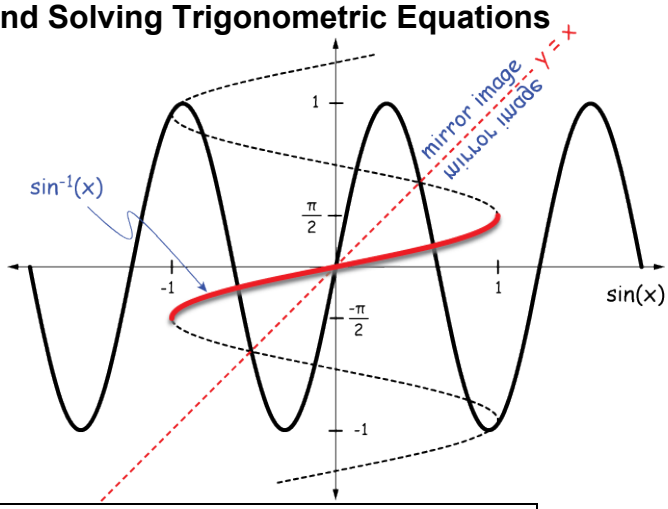
Unit 8.1, 8.2, 8.7, 8.8 Inverse Trigonometric Functions and Solving Trigonometric Equations



By the end of this unit, you should be able to:

- ☐ find the exact values of inverse trig functions
- ☐ find approximate values of inverse trig functions
- ☐ find exact values of composite trig functions
- ☐ find the inverse function of a trig function
- ☐ solve equations involving inverse trig functions
- ☐ solve equations with single trig functions
- ☐ solve trig equations in quadratic form
- ☐ solve trig equations using identities

Assignments:

8.1 –	Inverse Trig Functions – pg. 612 #13-67odd
8.2 –	More Inverse Trig Functions – pg. 618 #9-55odd
8.7 –	Solving Trig Equations – pg. 653 #7-25odd, 31-47odd
8.8 –	Solving More Trig Equations – pg. 653 #7-15odd, 29, 31-33

Review Problems

Evaluate each expression. Give exact answers. Keep any angle measures in radians.

1. $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$
2. $\csc^{-1}\left(\sqrt{2}\right)$
3. $\tan^{-1}(-1)$
4. $\sin\left(\frac{5\pi}{6}\right)$
5. $\cos^{-1}(-4)$
6. $\sec^{-1}(2)$
7. $\sec\left(\cos^{-1}\left(\frac{1}{2}\right)\right)$
8. $\csc\left(\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right)$
9. $\sec\left(\tan^{-1}\left(\sqrt{3}\right)\right)$
10. $\csc\left(\cos^{-1}\left(-\frac{3}{8}\right)\right)$
11. $\cot\left(\cos^{-1}\left(-\frac{\sqrt{3}}{3}\right)\right)$
12. $\csc\left(\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)+\cot\left(\tan^{-1}(1)\right)$
13. $\sin^{-1}\left(\cos\left(\frac{3\pi}{4}\right)\right)+\cos^{-1}\left(\sin\left(-\frac{\pi}{4}\right)\right)$

Solve the equation. Give the general formula for <u>all</u> solutions.

14. $6\tan\theta+13=19$
15. $\sin(2\theta)-\frac{\sqrt{3}}{2}=0$

Solve the equation over the interval $0 \le \theta < 2\pi$. Give exact answers.

18. $2\sin(2\theta)=-\sqrt{3}$
19. $2\cos^2\theta+9\cos\theta-5=0$
20. $\sin(2\theta)=-\cos\theta$
21. $\cos^2\theta-1=0$
22. $-6\sin^{-1}(x)=\pi$

23. Find the inverse of $f(x)=4\sin(x)-3$. Then find the domains of *f* and f^{-1}.