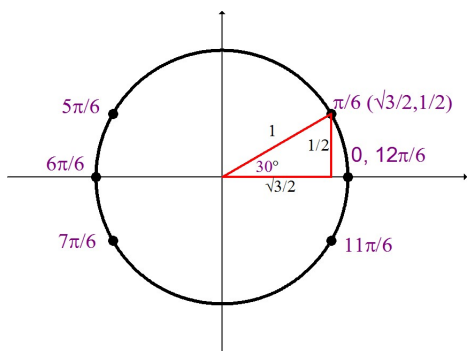


5.4 Tangent, Cotangent, Secant, Cosecant

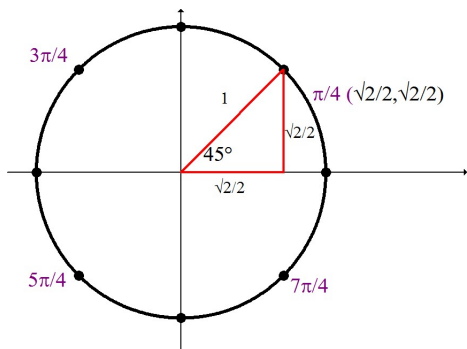
Part 1

Evaluate without using a calculator. Give exact values.

$$1. \tan\left(\frac{\pi}{6}\right) = \frac{y}{x} = \frac{1/2}{\sqrt{3}/2} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

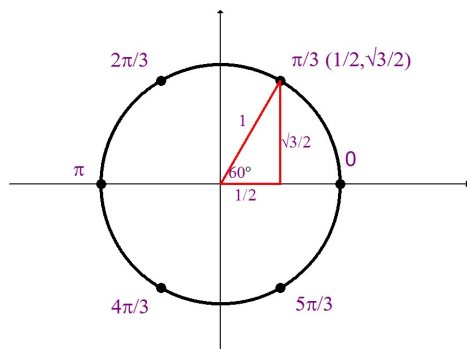


$$2. \sec\left(\frac{\pi}{4}\right) = \frac{1}{x} = \frac{1}{\sqrt{2}/2} = \frac{2}{\sqrt{2}} = \sqrt{2}$$

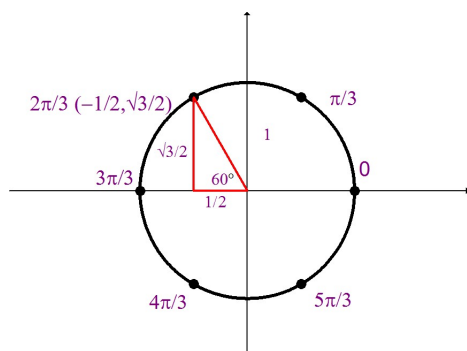


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

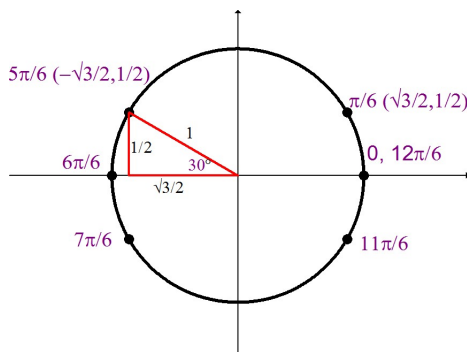
$$3. \csc\left(\frac{\pi}{3}\right) = \frac{1}{y} = \frac{1}{\sqrt{3}/2} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$



$$4. \tan\left(\frac{2\pi}{3}\right) = \frac{y}{x} = \frac{\sqrt{3}/2}{-1/2} = -\sqrt{3}$$

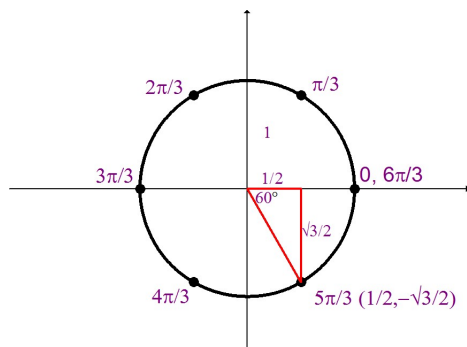


$$5. \sec\left(\frac{5\pi}{6}\right) = \frac{1}{x} = \frac{1}{-\sqrt{3}/2} = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$$

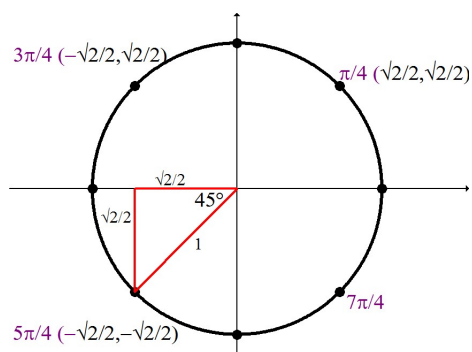


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

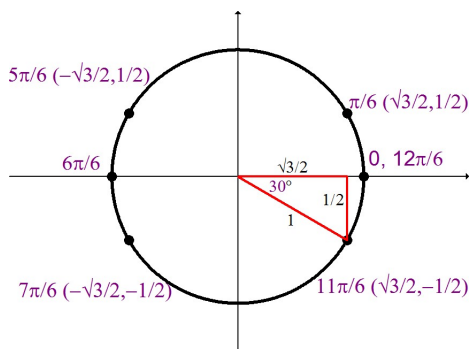
$$6. \csc\left(\frac{5\pi}{3}\right) = \frac{1}{y} = \frac{1}{-\sqrt{3}/2} = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$$



$$7. \tan\left(\frac{5\pi}{4}\right) = \frac{y}{x} = \frac{-\sqrt{2}/2}{-\sqrt{2}/2} = 1$$

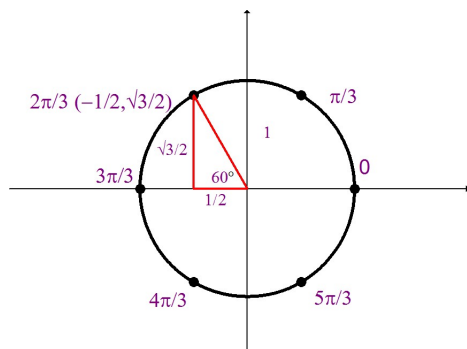


$$8. \sec\left(\frac{11\pi}{6}\right) = \frac{1}{x} = \frac{1}{\sqrt{3}/2} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$

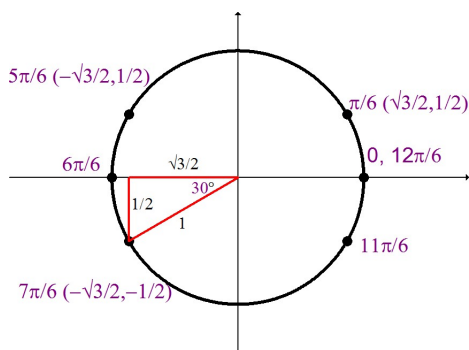


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

$$9. \tan\left(\frac{2\pi}{3}\right) = \frac{y}{x} = \frac{-\sqrt{3}/2}{1/2} = -\sqrt{3}$$

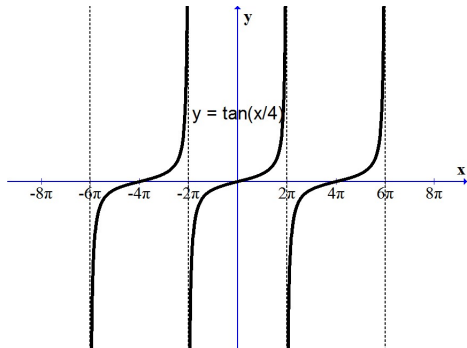


$$10. \csc\left(\frac{7\pi}{6}\right) = \frac{1}{y} = \frac{1}{-1/2} = -2$$

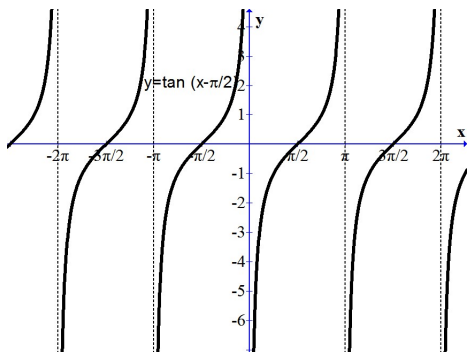


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

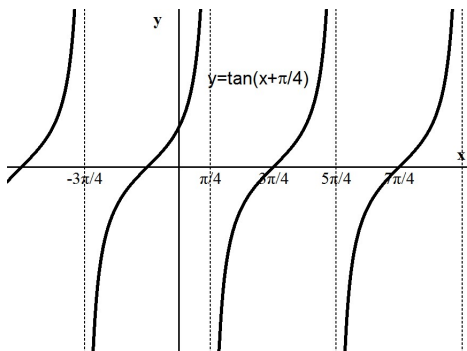
4. $y = \tan \frac{1}{4}x$



5. $y = \tan\left(x - \frac{\pi}{2}\right)$

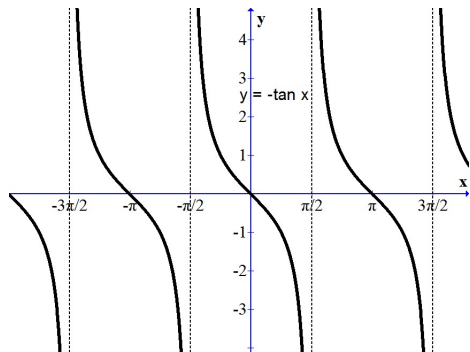


6. $y = \tan\left(x + \frac{\pi}{4}\right)$

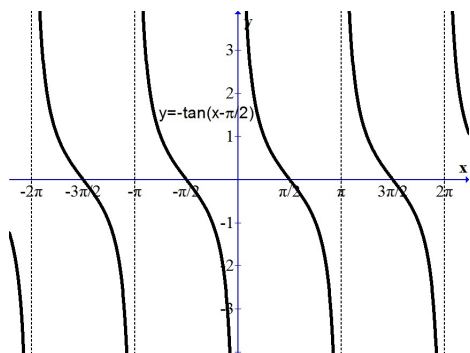


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

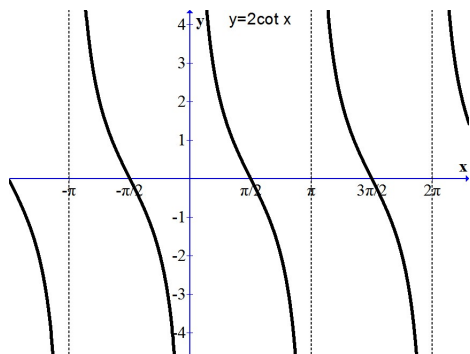
7. $y = -\tan x$



8. $y = -\tan\left(x - \frac{\pi}{2}\right)$

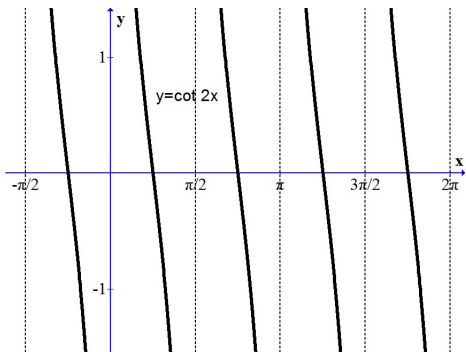


9. $y = 2 \cot x$

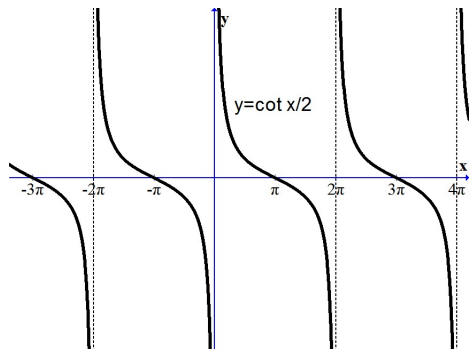


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

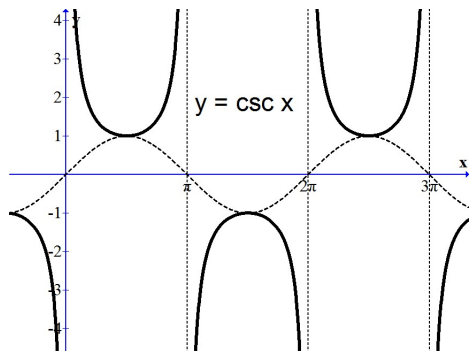
10. $y = \cot 2x$



11. $y = \cot \frac{1}{2}x$

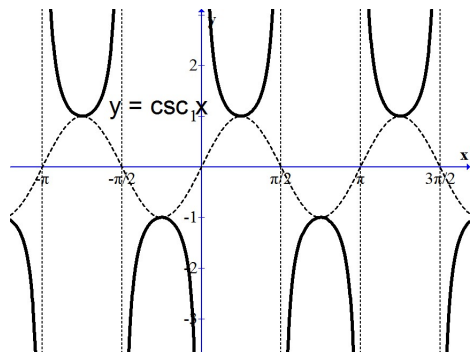


12. $y = \csc x$

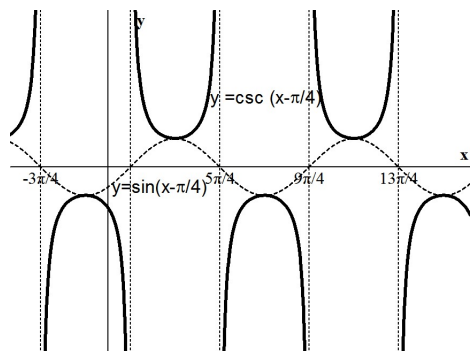


5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

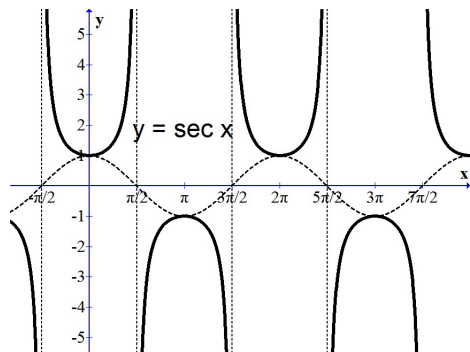
13. $y = \csc(2x)$



14. $y = \csc\left(x - \frac{\pi}{4}\right)$



15. $y = \sec x$



5.4 Tangent, Cotangent, Secant, Cosecant Math 170 Homework Solutions

16. $y = \sec \frac{1}{2}x$

