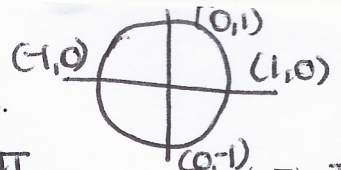


~~PROBLEM~~



Evaluate the expression without using a calculator. Give your answer in radians.

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

Draw a reference triangle and evaluate each of the following expressions.

- 13) $\sin(\arccos \frac{1}{2}) = \frac{\sqrt{3}}{2}$ 14) $\tan(\arcsin \frac{3}{5}) = \frac{3}{4}$ 15) $\cos(\arcsin \frac{1}{4}) = \frac{\sqrt{15}}{4}$ 16) $\tan(\arccos \frac{\sqrt{5}}{6}) = \frac{\sqrt{31}}{\sqrt{5}}$
 17) $\sin(\csc^{-1} \frac{6}{5}) = \frac{5}{6}$ 18) $\cot(\tan^{-1} \frac{1}{10}) = 10$ 19) $\sec(\cot^{-1} \frac{12}{5}) = \frac{14}{13}$ 20) $\tan(\sec^{-1} \frac{\sqrt{13}}{3}) = \frac{2}{3}$

Homework – Inverse Trig Functions (from Textbook section 4.7 p. 349 – 350 #1 – 16 and #49 – 58)

In Exercises 1-16, evaluate the expression without using a calculator.

1. $\arcsin \frac{1}{2} = \frac{\pi}{6}$ 2. $\arcsin 0 = 0$ 3. $\arccos \frac{1}{2} = \frac{\pi}{3}$ 4. $\arccos 0 = \frac{\pi}{2}$
 5. $\arctan \frac{\sqrt{3}}{3} = \frac{\pi}{6}$ 6. $\arctan(-1) = -\frac{\pi}{4}$ 7. $\cos^{-1} \left(-\frac{\sqrt{3}}{2}\right) = \frac{5\pi}{6}$ 8. $\sin^{-1} \left(-\frac{\sqrt{2}}{2}\right) = -\frac{\pi}{4}$
 9. $\arctan(-\sqrt{3}) = -\frac{\pi}{3}$ 10. $\arctan \sqrt{3} = \frac{\pi}{3}$ 11. $\arccos \left(-\frac{1}{2}\right) = \frac{2\pi}{3}$ 12. $\arcsin \frac{\sqrt{2}}{2} = \frac{\pi}{4}$
 13. $\sin^{-1} \frac{\sqrt{3}}{2} = \frac{\pi}{3}$ 14. $\tan^{-1} \left(-\frac{\sqrt{3}}{3}\right) = -\frac{\pi}{6}$ 15. $\tan^{-1} 0 = 0$ 16. $\cos^{-1} 1 = 0$

In Exercises 49-58, find the exact value of the expression.
 (Hint: Sketch a right triangle.)

Show work on separate paper.

49. $\sin(\arctan \frac{3}{4}) = \frac{3}{5}$ 50. $\sec(\arcsin \frac{4}{5}) = \frac{5}{3}$ 51. $\cos(\tan^{-1} 2) = \frac{1}{\sqrt{5}}$ 52. $\sin(\cos^{-1} \frac{\sqrt{5}}{5}) = \frac{2\sqrt{5}}{5}$
 53. $\cos(\arcsin \frac{5}{13}) = \frac{12}{13}$ 54. $\csc[\arctan(-\frac{5}{12})] = -\frac{13}{5}$ 55. $\sec[\arctan(-\frac{3}{5})] = -\frac{5}{4}$ 56. $\tan[\arcsin(-\frac{3}{4})] = -\frac{3}{\sqrt{7}}$
 57. $\sin[\arccos(-\frac{2}{3})] = \frac{\sqrt{5}}{3}$ 58. $\cot(\arctan \frac{5}{8}) = \frac{8}{5}$