

1. Evaluate the expression without using a calculator.

a.  $\arcsin\left(-\frac{\sqrt{3}}{2}\right)$

e.  $\tan\left(\arcsin\left(\frac{4}{5}\right)\right)$

b.  $\arctan(1)$

c.  $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

f.  $\sec(\arctan(x))$

d.  $\operatorname{arccot}\left(\frac{2\sqrt{3}}{3}\right)$

2. Solve for  $x$ .

a.  $\arccos(2x - \pi) = \frac{3}{4}$

b.  $\arcsin x = \operatorname{arccsc} x$

3. Find the derivative of the function. **Write your result as a single trigonometric expression.**

a.  $h(x) = 3 \arctan 2x$

b.  $f(x) = x \arccos(x-1)$

c.  $g(t) = 16 \arcsin \frac{t}{4} - t\sqrt{16-t^2}$

d.  $f(x) = \arcsin \sqrt{x}$

4. Consider the function  $x^2 + x \arctan y = y - 1$  at the point  $\left(-\frac{\pi}{4}, 1\right)$ .
- a. Find the slope of the line tangent to the function at the given point.

- b. Find the equation of the line tangent to the function at the given point.