

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 3.5

Math 1000 Worksheet

FALL 2025

For practice only. Not to be submitted.

1. Find an exact value for each of the following expressions.

(a) $\arcsin\left(-\frac{\sqrt{2}}{2}\right)$
(b) $\arccos\left(-\frac{\sqrt{2}}{2}\right)$
(c) $\text{arcsec}\left(\frac{2\sqrt{3}}{3}\right)$
(d) $\arctan\left(\tan\left(\frac{9\pi}{4}\right)\right)$
(e) $\sin\left(\arccos\left(\frac{5}{13}\right)\right)$
(f) $\cos(\arctan(2))$

2. Differentiate each of the following functions.

(a) $y = \text{arcsec}(\ln(x))$
(b) $y = x^2 \arctan(3x)$
(c) $y = \arcsin(\tan(t^2))$
(d) $y = \tan(\arcsin(t^2))$

3. Find the equation of the line tangent to

$$f(x) = \arcsin\left(\frac{x-2}{2}\right) - 2 \arcsin\left(\frac{\sqrt{x}}{2}\right)$$

at $x = 2$.

4. Use implicit differentiation to find $\frac{dy}{dx}$, given

$$\sqrt{1 - x^2 y^2} = \arccos(xy).$$

5. Prove that $\frac{d}{dx}[\arccos(x)] = -\frac{1}{\sqrt{1 - x^2}}$.