The University of Calgary
Department of Mathematics and Statistics
MATH 253
Handout # 2

A

1. Evaluate $\arcsin(\sin(\frac{17}{6}\pi))$ without a calculator.
2. Find the derivative and the domain of the derivative of $f(x) = \arctan(2\sqrt{x} - \dfrac{3}{x})$.
3. Find the area of the region between $y = 2\,|x|$ and $y = 3 + x$.

B

1. Simplify $\arctan(\tan(x))$ for $x \in \left(-\frac{5}{2}\pi, -\frac{3}{2}\pi\right)$.
2. Find the derivative and the domain of the derivative of $f(x) = \arcsin(\dfrac{2}{x})$.
3. Find the area of the region between $y + x = 1$ and $y^2 = 1 - x$.

C

1. Evaluate without a calculator: $\arctan(\tan(-\frac{3}{4}\pi))$.
2. Find the derivative and the domain of the derivative of $f(x) = \arcsin(\sqrt{x+3} - 2)$.
3. Find the area of the region between $y = 3x - 3$ and $y = 1 - x^2$.

D

1. Simplify $\cos(\arctan x)$ for any x.
2. Find the derivative and the domain of the derivative of $f(x) = \arctan(1 - \frac{2}{x^2})$.
3. Find the area of the region between $y = x^{\frac{1}{3}}$ and $y = x$.