

## MATH10560 Quiz 1 Study Guide

### 7.1\*-7.3\*. Inverse Functions, Logarithms and Exponents

- Inverse function problem requiring completing a square
- Logarithmic Differentiation
- Number e expressed as a limit

### 7.4. Inverse Trigonometric Functions

- Know domain and range for  $\sin^{-1} x$ ,  $\cos^{-1} x$ ,  $\tan^{-1} x$ ,  $\sec^{-1} x$ ,  $\csc^{-1} x$ ,  $\cot^{-1} x$
- Know inverse trig values of  $1, \frac{\sqrt{2}}{2}, \frac{\sqrt{3}}{2}, \frac{1}{2}, \sqrt{3}, \frac{\sqrt{3}}{3}, 0$
- Use triangles to solve composed functions, i.e.  $\sin(\csc^{-1}(\frac{x}{2}))$ , etc.
- Derivatives of  $\sin^{-1} x$ ,  $\cos^{-1} x$ ,  $\tan^{-1} x$ ,  $\sec^{-1} x$
- Using triangles to get derivatives
- Integrals of  $\frac{1}{\sqrt{a^2-u^2}}$ ,  $\frac{1}{a^2+u^2}$ ,  $\frac{1}{u\sqrt{u^2-a^2}}$

### 7.6. Hyperbolic Functions

- Definition of  $\sinh(x)$ ,  $\cosh(x)$
- Using definitions to work identities
- Derivatives and Integrals of all functions
- Example:** Prove that  $\cosh^2 x = \frac{\cosh(2x)+1}{2}$