Lecture 4

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10131 - Calculus and Vectors

Inverse trigonometric functions, sketching the graphs

Lecture 4

1. Inverse trigonometric functions: $\sin^{-1} x$, $\cos^{-1} x$ and $\tan^{-1} x$

2. Sketching the graphs

The sine function $f(x) = \sin x$ is NOT one-to-one function, but on the interval $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ it is one-to-one The inverse is denoted by

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Example: Sketch the graphs of $\sin^{-1} x$, $\cos^{-1} x$ and $\tan^{-1} x$

Simple transformation

Sketch the curve satisfying

$$y = f(x - a) + b.$$

1) shift the curve $y = f(x)$ to the right by a

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Example: Sketch the curve

$$y = (x - 2)^6 + 3$$

Sketching the graphs

Sketch the graphs of the following functions:

$$e^{-x^2}$$

$$\frac{2}{2+x^4}$$

$$|1+x^5|$$

$$\ln x^4$$

$$\sqrt{\frac{2x}{x-6}}$$