# Subject 1234: Course title

## Lecture 90 Worksheet

**Summer 2099** | **Firstname Lastname** | **Apr 34**

**Title:** Lecture Topic

**Summary:** A brief summary of lecture.

## §A. First Section

Uses kpfonts.

**Definition A.1: Definition Title**

A definition. The title is optional.

We can have numbered list as follows:

(a) Vectors and Matrices are written as $\vec{r}(t) = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$.

(b) Typewriter font is written as `Computer Code`.

or itemized list as follows:

- Here is how to write a table such as table 1.

| | $f(x,y) < 0$ | $f(x,y) = 0$ | $f(x,y) > 0$ |
|---|---|---|---|
| $g(x,y) < 0$ | $\swarrow$ | $\downarrow$ | $\searrow$ |
| $g(x,y) = 0$ | $\leftarrow$ | $\cdot$ | $\rightarrow$ |
| $g(x,y) > 0$ | $\nwarrow$ | $\uparrow$ | $\nearrow$ |

Table 1: Arrows

- When we need more than one line to align nicely:

$$\begin{aligned} y' &= \mu - y^2 && \textbf{(saddle-node)} \\ y' &= \mu y - y^2 && \textbf{(transcritical)} \\ y' &= \mu y - y^3 && \textbf{(supercritical pitchfork)} \\ y' &= \mu y + y^3 && \textbf{(subcritical pitchfork)} \end{aligned}$$

- If you need to label each line, you can get rid of the star from `align*`

$$\frac{dx}{dt} = f(x,y,t) \tag{1}$$

$$\frac{dy}{dt} = g(x,y,t) \tag{2}$$

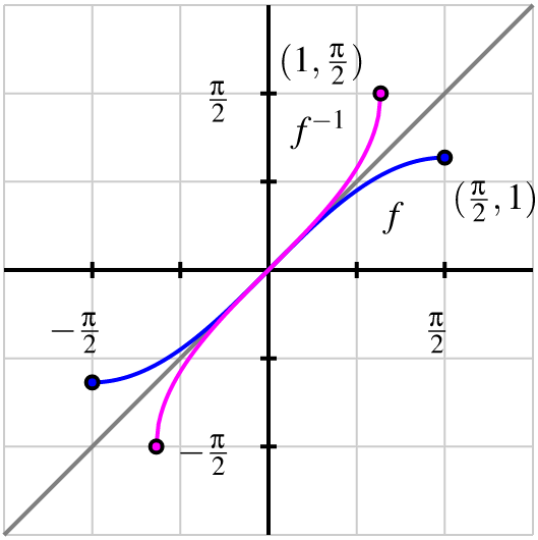


Figure 1: $\arcsin x$

- You can insert figures such as fig. 1 using `figure` environment.

**Example A.2: Title**

- First example
  - Note 1
  - Note 2
- Second example

Some other text.

**Theorem A.3: Theorem Title**

*A Theorem that uses objects defined in definition 1. Title is optional.*

$$\int_a^b uv' \, dx = [u(x)v(x)]\Big|_a^b - \int_a^b u'(x)v(x) \, dx$$

**Proof of theorem 3.**

Proof text ends in qed symbol. Must be supplied the label of the theorem. ■

## ■ Question 1. Automatic Question numbers in References

(a) Greek letters and uppercase math letters are always upright. Such as

(i) $\alpha x^2 + \beta$

(ii) $y = mx + C \in \mathbb{R}$

(b) Do the following tasks after 1.a.

(i) first do a.i. (ii) ?? (iii) Profit

*Solution.* Solution to the exercise. Uncomment the "solutionfalse" flag to make solutions invisible. ■

**Fun Fact:** This is a note with a custom title. Default is 'Note:'.

## §B. Second Section

**Axiom 2.4**

*This is an axiom.*

Code:

```
$ chmod +x hello.py
$ ./hello.py

Hello World!
```

Digression

A digression into tangentially related topics.

### Case 1: First case

When example 2 is true.

**A Warning:** Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.

### Case 2: Second case

When example 2 is false.

**Important Topic.** Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.