

Example worksheet

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This is an example worksheet with exercises denoted by big `tcolorbox`s.

1 Files

There is a `\filename` macro for typesetting filenames. This is useful for specifying sub-mission structure.

Add your code to `\filename{class1.ml}`

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2 Tasks

```
\newmintinline{ocaml}{}{}
```

```
\newcommand{\theFile}{\filename{class1.ml}}
```

```
\begin{task*}[Some un-numbered task]
```

All tasks will be marked with a `{\color{red!75!black} red}` box!

These must all be completed for full marks.

```
\end{task*}
```

```
\begin{task}[Numbered task]
```

```
\label{task:increment}
```

In `\theFile`, define a new function named `\ocamlinline/increment/` which
→ takes a single argument and adds 1 to it.

Your function must have type `\ocamlinline/int -> int/`.

```
\end{task}
```

Some un-numbered task

All tasks will be marked with a `red` box! These must all be completed for full marks.

Task 1: Numbered task

In `class1.ml`, define a new function named `increment` which takes a single argument and adds 1 to it. Your function must have type `int -> int`.

3 Solutions

```
\begin{solution*}[to Task~\ref{task:increment}]
```

```
\mintinline{ocaml}{let increment x = x + 1}
```

```
\end{solution*}
```

Solution to Task 2

```
let increment x = x + 1
```

4 Examples

```
\begin{example*}[Example proof using induction over the naturals]
\begin{lemma}[$3^n - 1$ is even]
  \label{lemma:power-of-three-even}
  $$\forall n. \exists x. 3^n - 1 = 2x$$
\end{lemma}
\begin{proof}[Proof of Lemma~\ref{lemma:power-of-three-even}]
\dots
\end{proof}
\end{example*}
```

Example proof using induction over the naturals

Lemma 1 ($3^n - 1$ is even).

$$\forall n. \exists x. 3^n - 1 = 2x$$

Proof of Lemma 1. ...

□

5 Margin notes

Margin notes are set up somewhat sensibly.

```
\marginpar{This text is nonsense, and this note isn't very helpful
↪ either.}
\lipsum[1]
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

This text is nonsense, and this note isn't very helpful either.