

SAMPLE ARTICLE WITH LONG TITLE SHOWING VARIOUS L^AT_EX CONSTRUCTIONS

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ABSTRACT. Abstract goes here.

1. INTRODUCTION

Some introductory text goes here.

2. COMMON CONSTRUCTIONS

Here is a definition. Notice the use of `\emph` to get the defined term italicized.

Definition 2.1. Let A and B be sets. A function $f: A \rightarrow B$ is called *surjective* if for every $b \in B$, there exists $a \in A$ such that $f(a) = b$.

Now let's use the definition in a theorem.

Proposition 2.2 ([SG18, Theorem 3.1]). *Let A be an $n \times n$ matrix. The linear transformation T defined by $T(\vec{x}) = A\vec{x}$ is surjective if and only if $\det(A) \neq 0$.*

Proof. A proof would go here. □

Theorem 2.3 (Pythagorean Theorem). *Let a , b , and c be the lengths of the sides of a right triangle. Then*

$$a^2 + b^2 = c^2.$$

Proof. By Proposition 2.2, we need 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. □

Here is are the functions we defined $\widehat{\text{Var}}(\hat{\pi}_G)$ that are from [SG18].

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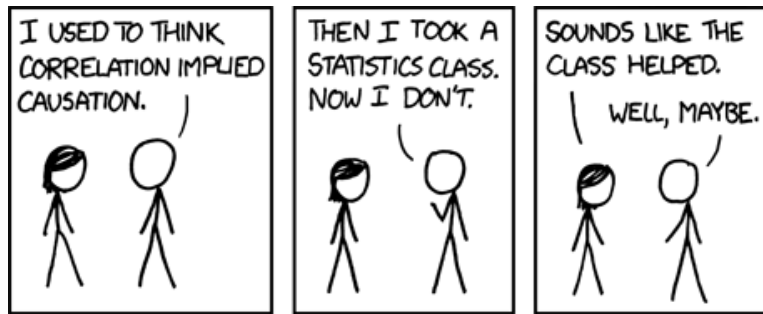


FIGURE 1. xkcd: Correlation (<https://xkcd.com/552/>). Correlation doesn't imply causation, but it does waggle its eyebrows suggestively and gesture furtively while mouthing 'look over there'.

TABLE 1. Example of a table using `tabular`.

Centered	Left	Right
Red	Yellow	Blue
π	$\sqrt{3}$	$\frac{1}{2}$

TABLE 2. Example of a table using `array`.

Centered	Left	Right
Red	Yellow	Blue
π	$\sqrt{3}$	$\frac{1}{2}$

Here are some matrices. Use `matrix` for no brackets, use `bmatrix` for square brackets, and use `pmatrix` for round brackets.

$$A = \begin{matrix} a & b \\ c & d \end{matrix} \quad A = \begin{bmatrix} a & b \\ c & d \end{bmatrix} \quad A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

3. EQUATIONS

Use `\equation` for a numbered single-line displayed equation.

$$(3.1) \quad \sin^2(\phi) + \cos^2(\phi) = 1.$$

Use `\[...]` for a single line of displayed math with no equation number, or use the starred version of equation

$$\sin^2(\phi) + \cos^2(\phi) = 1,$$

or

$$\sin^2(\phi) + \cos^2(\phi) = 1.$$

Use `align` for an multiple equations that you want to align.

$$(3.2) \quad a_1 = b_1 + c_1$$

$$(3.3) \quad a_2 = b_2 + c_2 - d_2 + e_2$$

Use `gather` for an multiple equations that you do not want to align. (3.2) (3.3)

$$(3.4) \quad a_1 = b_1 + c_1$$

$$(3.5) \quad a_2 = b_2 + c_2 - d_2 + e_2$$

Use `split` inside an `equation` environment for an single equation that you want to align.

$$(3.6) \quad \begin{aligned} a &= b + c \\ &+ e + f \\ &= g + h. \end{aligned}$$

Use `multline` for an equation that is too long.

$$(3.7) \quad \begin{aligned} A &= a + b + c + d + e + f + i + j + k + l + m + n \\ &+ o + p + q + r + s + t + u + v + w + x + y + z. \end{aligned}$$

There are starred versions of these constructions that you can use if you don't want equation numbers.

Use `\begin{cases} \dots \end{cases}` to enter a piecewise function.

$$P(r, j) = \begin{cases} 0 & \text{if } r - j \text{ is odd,} \\ r!(-1)^{(r-j)/2} & \text{if } r - j \text{ is even.} \end{cases}$$

4. DIFFERENCES BETWEEN THE ARTICLE/BOOK CLASSES AND THE AMSART/AMSBOOK CLASSES

The two pairs of classes are largely interchangeable, so it is easy to switch from one class to another after a paper is finished. The only editing that may be needed is in the title matter since this is handled differently by the two classes. Here are the main differences:

In the AMS classes, the abstract goes before the `\maketitle` command; in the article/book classes, it goes after `\maketitle`. When using article/book, add `\usepackage{amsmath, amsthm}` to make the $\mathcal{A}\mathcal{M}\mathcal{S}$ -L^AT_EX commands available. The AMS document classes load these packages automatically, so no explicit loading is needed.

The article/book classes allow footnotes in the title matter, the AMS classes do not. In the “article/book” class, one can put footnotes to the author or title containing, for example, a grant acknowledgement, a subject classification, or the author's address. With the AMS classes you have to use the commands `\thanks{...}` (for acknowledgements), `\subjclass{...}`, and `\address{...}` to provide this information. The `\thanks{...}` command is particularly versatile. While intended for things like acknowledgements of grant support, can be used to generate arbitrary (unnumbered) footnotes on the title page. Moreover, you can have multiple instances of `\thanks{...}`.

In the article/book classes equation numbers are set by default on the right of the page; in the AMS classes they are set on the left of the page.

REFERENCES

- [SG18] David P. Suarez and Sat Gupta. Variations of the Greenberg unrelated question binary model. *Involve*, 11(1):119–126, 2018.

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