Paper Template

Name

Abstract

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Contents

1 Introduction

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1.1 Prior Experience

1.1.1 MAT 2240: Introduction to Linear Algebra

Information about your prior experience with the topic before the capstone, including how and in what context you covered the topic in classes and other experiences as above, including definitions and a summary of examples, important results, proofs, etc. This also serves an an introduction to the topic aimed at others in this class who may not have had the coursework you did.

$$A = \begin{pmatrix} \cos\theta & -\sin\theta & 0 \\ \sin\theta & \cos\theta & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

represents a counterclockwise rotation by θ in the $x - y$ plane with the z coordinate fixed.

1.1.2 MAT 3110: Modern Algebra

1.1.3 MAT 3610: Introduction to Geometry

2 Developments

2.1 Prior Progress

2.1.1 Earliest Work

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2.1.2 18th-20th Century

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2.2 Recent Scholarly Research

Find at least two scholarly research articles from the last ten years that relates to the topic, to show that related work continues, and include them in your bibliography.

Here are in text citations for the bibliography [1, 2, 3, 4, 5] which should be placed where appropriate, like [1]. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut lobortis, urna eu gravida tincidunt, dolor sem tempor leo, sed rutrum lorem magna ut quam. Mauris malesuada ipsum in nulla accumsan mollis ullamcorper tellus facilisis.

Here are some sample mathematics commands

$$\overline{Z}_n = \begin{cases} e^{-\delta T} & , 0 \leq T \leq n \\ 0 & , T > n \end{cases}$$

The expected cost over the initial term period is given by

$$\overline{C}_{0:n} = E[b_T \overline{Z}_n] = \int_0^n b_t e^{-\delta t} P(t) dt \tag{1}$$

The cost over the next n-years can be found,

$$\overline{C}_{x:n} = \int_0^n b_{x,t} e^{-\delta_x t} f_T(t) dt$$

$$\overline{C} = \sum_{k=0}^{\infty} e^{-\delta k} \int_k^{\infty} P(t) dt \, \overline{C}_{k:1}$$

$e^{-\delta k}$ is the discount factor discounting back to time $t = 0$, $\int_k^{\infty} P(t)dt$ is the expected percentage of stock left undecayed at time $t = k$, and $\overline{C}_{k:1}$ is the one year term cost per ton of CO_2 emitted during the time interval $t = k$ to $t = k + 1$ (year $k + 1$) from the stock that has been exposed to the decay hazard for $k-$years and survived.

The term costs below illustrate 1-year term costs for three different wood products

Year	Waste, bark, fuel	Pulpwood	Fencing
1	\$4.69	\$19.08	$\$4.0x10^{-8}$
2	\$5.81	\$14.95	$\$3.6x10^{-6}$
3	\$5.68	\$8.28	$\$4.6x10^{-5}$
4	\$5.25	\$4.23	$\$2.5x10^{-4}$
5	\$4.72	\$2.08	$\$9.0x10^{-4}$
PV Total Cost	\$23.74	\$46.15	$\$1.0x10^{-3}$
5-year Term	\$23.74	\$46.15	$\$1.0x10^{-3}$

Assume 1 ton of production (tons CO_2 potential), initial cost $b = \$50$ per ton CO_2, inflation rate in the cost of CO_2, $r = 2\%$ and a long term continuous discount rate, $\delta = 5\%$.

If you want to include **images**, then pdf jpg png formats of images are recognized, for example with the command `\includegraphics[height=2in]{filename}` and the image must be in the same directory as the tex file.

Caution: There are special codes for symbols like

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Caution: “2 single left quotes” versus ”double quotes on left”

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gives “ while “ gives ”

3 Acknowledgements and References

References

[1] Cullen, Charles. *Matrices and Linear Transformations, 2nd edition.* Reading, MA: Addison-Wesley Publishing Company, 1972

[2] Kastrup, Hans A. *On the Advancements of Conformal Transformations and their Associated Symmetries in Geometry and Theoretical Physics.* Annalen der Physik (v. 17/9-10, 2008)

[3] Kleiner, Israel. *A History of Abstract Algebra.* Boston: Birkhauser, 2007

[4] O'Connor, John and Edmund Robertson. *MacTutor History of Mathematics Archive: Search Results for Transformations.* Available online: `http://www-history.mcs.st-andrews.ac.uk/Search/historysearch.cgi?SUGGESTION=transformations&CONTEXT=1` (accessed February 2011)

[5] Rosenfeld, Boris Abramovich. *A History of Non-Euclidean Geometry: Evolution of the Concept of a Geometric Space.* New York: Springer, 1988

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