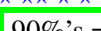


Welcome to class!

with Prof. D'Ambroise

High Expectations





90%'s = A-range

80%'s = B-range

Grading Standards

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
★ 90%'s = A-range ★
★ 80%'s = B-range ★
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74-79% = C or C-plus = passing

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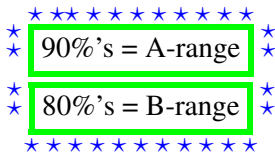
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70-73% = C-minus = failing

60%'s = D-range = failing

below 60% = F = failing

Grading Standards



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*All students are held to the same high standards
regardless of job/home/other class responsibilities.*

Grading Standards

*“Aim to pass”
is a bad strategy
(usually results in
failure)*



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90%'s = A-range

80%'s = B-range

*“Aim for B”
is better
(not as risky &
leaves room
for error!!)*

74-79% = C or C-plus = **passing**


70-73% = C-minus = **failing**

60%'s = D-range = **failing**

below 60% = F = **failing**

All students are held to the same high standards regardless of job/home/other class responsibilities.

Grading Standards



*I hope you'll:
Aim for A !
Work hard !
Be humble !
Seek help !
:)*

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*Aiming to surpass
is the best
strategy!*

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How to read a math textbook

- **KEEP MOVING FORWARD** even if it means skipping parts
 - (math textbook \neq novel)
 - revisit skipped parts frequently until you get it
 - admit it when you need help
 - get help
- **MOST IMPORTANT = BE PERSISTENT & WORK HARD**

Concrete Steps for Successful Students

- read the book before class & write questions in margins

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- participate in class
 - take notes
 - ask questions & write questions in margins

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- start homework early
 - don't skip problems, work hard to understand *every* problem
 - test yourself using additional problems in the book

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Time Commitment

A student *with a strong background* and *who learns at an average pace* will need to commit **at least 10 hours** to this class each week after class interacting *directly* with the course material.

You might need more!

Math is vast!

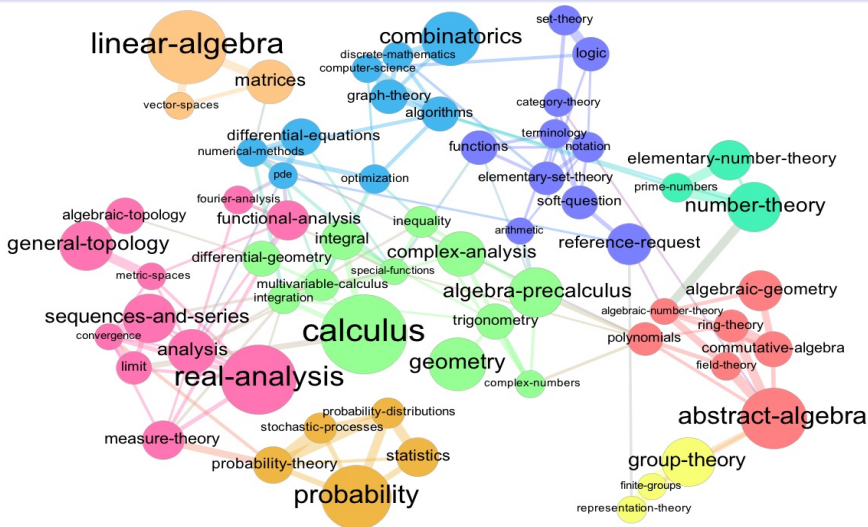


Image from Stack Exchange: <http://meta.math.stackexchange.com/questions/6479/a-graph-map-of-math-se>

Warning on outside resources

Relying too heavily on outside resources
can cause *confusion and failure!*

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If you use outside resources you must follow up with
reading the book, coming to office hours,
and interacting with *our* course material.

Only your Prof. can tell you what WE focus on in THIS class!

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A student *with a strong background* and *who learns at an average pace* will need to commit **at least 10 hours** to this class each week after class interacting directly with our course material.

You might need more!

Understand the Five Stages of Learning[†]

[†] A Five-Stage Model of the Mental Activities Involved in Directed Skill Acquisition

by Stuart E. Dreyfus and Hubert L. Dreyfus, published by US Air Force, available at

<http://www.dtic.mil/dtic/tr/fulltext/u2/a084551.pdf>

1 Novice

- knows the rules, but has no situational decision-making skills
- cannot adapt quickly or handle complex combinations of the rules

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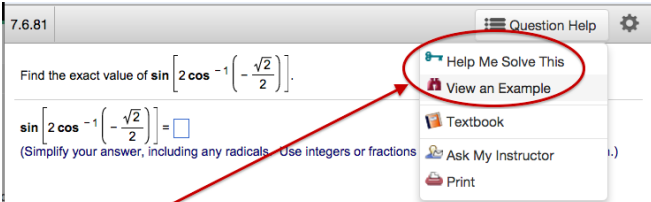
The novice car driver knows the rules of the road but does not respond quickly or efficiently to new situations.

The novice math student knows the basics but cannot solve problems quickly or efficiently.

1 Novice Level

= first 1-2 homework problems with a topic

You cannot surpass novice level
if you rely too heavily on provided instructions.



The screenshot shows a math problem interface. At the top left is the problem ID "7.6.81". At the top right is a "Question Help" button and a gear icon. The problem text is "Find the exact value of $\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{2}}{2} \right) \right]$." Below this is an input field containing $\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{2}}{2} \right) \right] = \square$. Below the input field is the instruction "(Simplify your answer, including any radicals. Use integers or fractions.)". A red circle highlights the "Question Help" menu, which contains the following options: "Help Me Solve This" (with a key icon), "View an Example" (with a book icon), "Textbook" (with a book icon), "Ask My Instructor" (with a person icon), and "Print" (with a printer icon). A red arrow points from the text "These buttons show you how to do the problem, step by step." to the "Help Me Solve This" button. Below the arrow is the text "Use them wisely, not as a crutch!". At the bottom is the text "To succeed in this class you MUST challenge yourself to complete problems on your own!".

7.6.81

Question Help

Find the exact value of $\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{2}}{2} \right) \right]$.

$\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{2}}{2} \right) \right] = \square$

(Simplify your answer, including any radicals. Use integers or fractions.)

Help Me Solve This

View an Example

Textbook

Ask My Instructor

Print

These buttons show you how to do the problem, step by step.

Use them wisely,
not as a crutch!

To succeed in this class you MUST challenge yourself
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Understand the Five Stages of Learning

2 Competency

- has considerable situational experience
- understands exceptions or deviations to the rules that might apply in different situations
- knows which situations are advantageous and which to avoid

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The competent car driver can recognize various dangerous situations and s/he can correct the situation by applying differing techniques such as slowing down, swerving, pulling over, or other maneuvers.

Understand the Five Stages of Learning

2 Competency

- has considerable situational experience
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- knows which situations are advantageous and which to avoid

The competent car driver can recognize various dangerous situations and s/he can correct the situation by applying differing techniques such as slowing down, swerving, pulling over, or other maneuvers.

The competent math student knows how to deal with edge cases such as undefined quantities, and knows how and why to choose different techniques based on different situations.

2 Competent Level

= after many homework problems & additional studying

You cannot surpass the competence level
if you don't test yourself frequently.

The screenshot shows a math problem interface. At the top left, the problem number "7.6.81" is circled in red. A red arrow points from this number down to the text "Seek out MORE than just the assigned HW!". Another red arrow points from the same number down to the text "Look for the book section reference and go find more problems in the book." A third red arrow points from the text "Take the initiative and quiz yourself regularly using extra book problems!" up towards the problem area. The problem itself asks to find the exact value of $\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{3}}{2} \right) \right]$. Below the problem, there is a text box for the answer and a note: "(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)".

7.6.81

Find the exact value of $\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{3}}{2} \right) \right]$.

$\sin \left[2 \cos^{-1} \left(-\frac{\sqrt{3}}{2} \right) \right] = \square$

(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression.)

Seek out MORE than just the assigned HW!

Look for the book section reference and go find more problems in the book.

Take the initiative and quiz yourself regularly using extra book problems!

In Problems 81–92, find the exact value of each expression.

81. $\sin \left(2 \sin^{-1} \frac{1}{2} \right)$

82. $\sin \left[2 \sin^{-1} \frac{\sqrt{3}}{2} \right]$

83. $\cos \left(2 \sin^{-1} \frac{3}{5} \right)$

84. $\cos \left(2 \cos^{-1} \frac{4}{5} \right)$

Understand the Five Stages of Learning

3 Proficiency

- less focus on situational difficulties
- more focus on long term goals

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The proficient car driver responds naturally to situational difficulties; they focus more on the higher overall goal of getting to the destination safely.

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- more focus on long term goals

The proficient car driver responds naturally to situational difficulties; they focus more on the higher overall goal of getting to the destination safely.

The proficient math student knows how to respond to edge cases and s/he knows how to choose between various techniques; they focus most on higher level understanding such as relating math to their desired career goals among other things.

3 Proficient Level **= your goal before each quiz**

Quiz = practice exam.

To perform at the proficiency level,
get substantial help *before quizzes*.

Understand the Five Stages of Learning

4 Expertise

- learner responds automatically without consciously using rules
- *highly developed and accurate* intuition; rules are instinctual

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The expert car driver has seen so much on the road that s/he is not surprised at challenges or incidents, and responds to them automatically.

Understand the Five Stages of Learning

4 Expertise

- learner responds automatically without consciously using rules
- *highly developed and accurate* intuition; rules are instinctual

The expert car driver has seen so much on the road that s/he is not surprised at challenges or incidents, and responds to them automatically.

The expert math student has seen so many problems that they are not surprised at the exam questions. The expert wastes no time deciding between various methods because they respond know instinctually what to do.

4 Expert Level **= your goal before each exam**

Exams test you at the expert level.

A rough guide for what to expect

- expert level knowledge = **B or above on exam**

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A rough guide for what to expect

- expert level knowledge = **B or above on exam**
- competence or proficiency level knowledge = **possible exam pass**
- novice or competence level knowledge = **exam failure**

Understand the Five Stages of Learning

5 Mastery

- moments of intense absorption in the subject matter
- mental energy no longer needed to produce nearly perfect results

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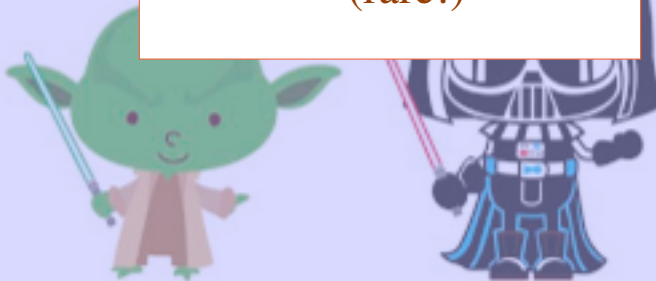


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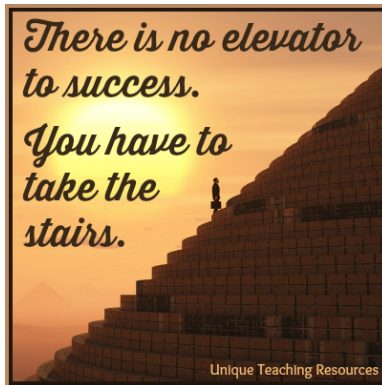
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Mastery = A-performance
(rare!)



Memes



Everyday

**I WILL TRY HARDER
THAN I DID BEFORE!**



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