

Math 120
Practice Exam B
November 2025

- This exam is a collection of old Exam 2 questions (this version draws from *Spring 2024 Ostroff* and *Spring 2018 Conroy*).
- Solutions to source exams are available in the Math 120 archive.
- This should NOT be your only source of studying but I hope this helps.
- Instructions are given below as a reminder of what exams look like.

Name _____

Student ID #_____

Section _____

HONOR STATEMENT

“I affirm that my work upholds the highest standards of honesty and academic integrity at the University of Washington, and that I have neither given nor received any unauthorized assistance on this exam.”

SIGNATURE: _____

- This exam consists of this cover, four pages of questions, and a blank scratch page.
- You will have 50 minutes.
- You may use a Ti-30x IIS calculator (no other models) and one 8.5×11 inch sheet of handwritten notes (front and back).
- Turn your cell phone OFF and put it away for the duration of the exam. You may not listen to headphones or earbuds during the exam.
- **You must show your work.** Correct answers with no supporting work may receive no credit.
- Leave answers in exact form or round to three digits after the decimal, unless otherwise specified.
- **Do not write within 1 cm of the edge.** Exams are scanned for grading.
- There may be multiple versions. Do not cheat. If your answer matches another version with no supporting work, you will receive a zero and be reported.
- Alternate text for any image is given at the bottom of the page where the image appears.

GOOD LUCK!

Spring 2024 Ostroff Exam 2 Problem 3

1. Carmy's restaurant is growing exponentially in popularity.

In the year 2020, there were 10 thousand customers.

In the year 2024, there were 13.6 thousand customers.

- (a) Write a function $c(t)$ for the number of customers, in thousands, t years after 2020.

Write your answer in standard exponential form.

$$c(t) = \underline{\hspace{10cm}}$$

- (b) When will there be 74 thousand customers? (Round to the nearest year.)

Year: _____

Spring 2024 Ostroff Exam 2 Problem 2

2. Suppose f is a linear-to-linear rational function with the following properties:

- $f(3) = -4$
- $f(25) = 8$
- The graph of f has a horizontal asymptote of $y = 5$.

(a) Find a formula for $f(x)$.

$f(x) =$ _____

(b) What is the domain of f ?

Domain: _____

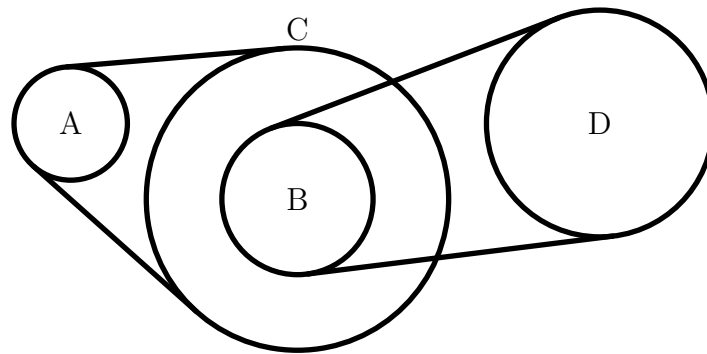
Spring 2018 Conroy Exam 2 Problem 3

3. (a) Restrict the domain of $f(x) = 2x^2 + 6x - 1$ to $x \leq -\frac{3}{2}$ and find the function's inverse.

- (b) Find the fixed points of the function $g(x) = 2x - \frac{1}{x+1}$.

Reminder: a fixed point is a solution to $g(x) = x$.

4. You have a set of pulleys connected in pairs by belts.



Pulley B and pulley C are attached to the same axle and rotate together.

Pulley A has a radius of 1.5 cm and rotates at the rate of one revolution every 12 seconds.

Pulley B has a radius of 2 cm.

Pulley D has a radius of 3.4 cm and rotates at the rate of 0.1 radians per second.

What is the radius of pulley C ?

Alt text: Diagram of four pulleys A, B, C, D. A ($r=1.5$ cm) belt-connected to B ($r=2$ cm). B shares axle with C (unknown radius). C belt-connected to D ($r=3.4$ cm).