



FINAL EXAM REVIEW

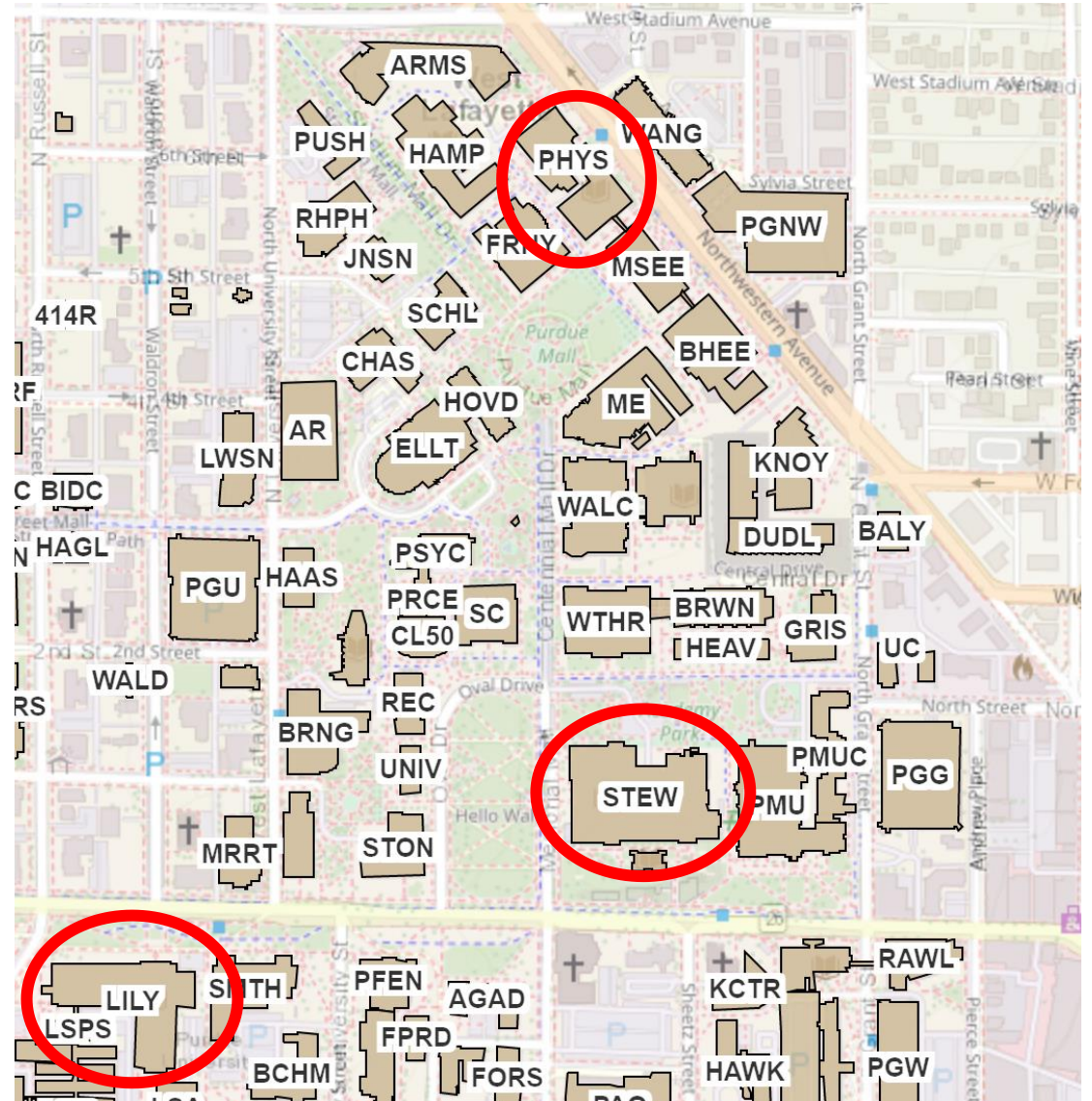
MA 16100 • FALL 2022

DR. HOOD



1. WHEN/WHERE IS FINAL?

- Tuesday Dec 13
- 8:00-10:00am
- We will be in multiple rooms for this Exam
 - STEW
 - LILY
 - PHYS

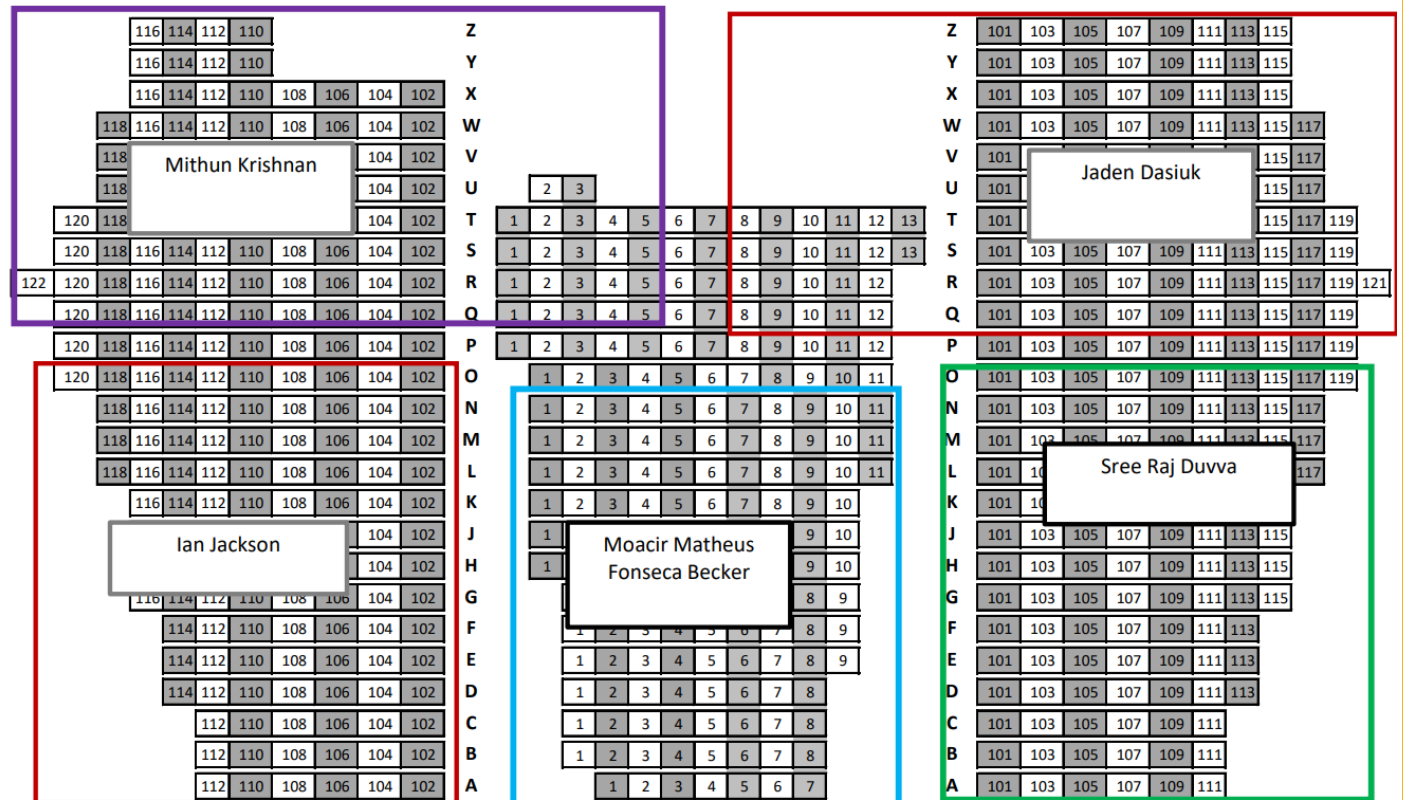


1. WHERE IS THE FINAL?

Loeb Playhouse (STEW 183)

Main Floor

- Grouped by TA:
 - Mithun Krishnan
 - Ian Jackson
 - Moacir Becker
 - Sree Duvva
 - Jaden Dasiuk

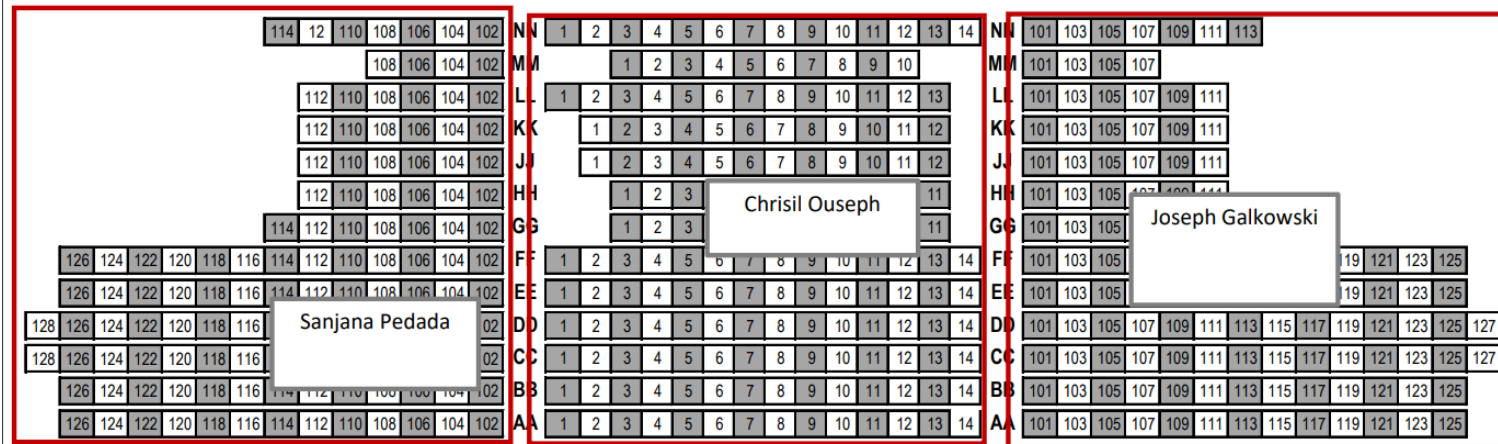


1. WHERE IS THE FINAL?

Loeb Playhouse (STEW 183)

Balcony

- Grouped by TA:
 - Sanjana Pedada
 - Chrisil Ouseph
 - Joseph Galkowski



1. WHERE IS THE FINAL?

LILY 1105

- Grouped by TA:
 - Atharv Mudur
 - Hannah Linzy
 - Nicholas Villareal-Styles
 - Annie Giokas

	X1	X2	X3	X4	X5	X6					
	W1	W2	W3	W4	W5	W6	W7				
	X	V1	V2	V3	V4	V5	V6	X			
U	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	
T	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	
S	S1	S2	S3	Atharv Mudur				S9	S10		
R	R1	R2	R3					R9	R10		
Q	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	
P	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
O	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	
N	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	
M	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	
L	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	
K	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	
J	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	
I	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	
H	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	
G	G1						8	G9	G10		
F	F1						8	F9	F10		
E	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	
D	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	
C	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	
B	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	
A	X	A1	A2	A3	A4	A5	A6			X	

	X	V7	V8	V9	V10	V11	V12	V13				
U	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20		
T	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20		
S	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20		
R	R11	R12						18	R19	R20		
Q	Q11	Q12	Hannah Linzy					18	Q19	Q20		
P	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20		
O	O11	O12	O13	O14	O15	O16	O17	O18	O19	O20		
N	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20		
M	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20		
L	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20		
K	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20		
J	J11	J12	J13	J14	J15	J16	J17	J18	J19	J20		
I	I11	I12	I13	I14	I15	I16	I17	I18	I19	I20		
H	H11							3	H19	H20		
G	G11							3	G19	G20		
F	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20		
E	E11	E12	E13	E14	E15	E16	E17	E18	E19	E20		
D	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20		
C	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20		
B	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20		
A	X	A7	A8	A9	A10	A11	A12	A13	A14			

1. WHERE IS THE FINAL?

PHYS 114

- Grouped by TA:
 - Tyler Dunaisky and Alex Hsu

The seating chart is divided into two main sections: "Back of Room" and "Tables with stools".

Back of Room: This section includes a 2x5 grid of tables (M1-M5, L1-L5), an "ADA table" with three sections (I1-I3, H1-H5, and a section for Tyler Dunaisky), and another 2x5 grid of tables (C1-C5, B1-B5, and A2-A5).

Tables with stools: This section is a large grid with rows labeled N through A and columns labeled 06 through 16. A red box highlights the area between columns 09 and 13. The name "Alexander Hsu" is written in the center of this grid.

	06	07	08	09	010	011	012	013	014											
N	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N								
M	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M	M17	M18	M19	M20	M21			
L	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L	L17	L18	L19	L20	L21			
K	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K	K17	K18	K19	K20	K21			
J	J6	J7	J8	J9	J10	J11	J12	J13							J19	J20	J21			
I	I6	I7	I8	I9	I10	I11	I12	I13							I19	I20	I21			
H	H6	H7	H8	H9	H10	H11	H12	H13	Alexander Hsu						H19	H20	H21			
G	G6	G7	G8	G9	G10	G11	G12	G13							G19	G20	G21			
F	F6	F7	F8	F9	F10	F11	F12	F13							F19	F20	F21			
E	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E	E17	E18	E19	E20	E21			
D	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D	D17	D18	D19	D20	D21			
C	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C	C17	C18	C19	C20	C21			
B	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B	B17	B18	B19	B20	B21			
A	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A	A17	A18	A19	A20				

1. WHERE IS THE FINAL?

PHYS 223

- Grouped by TA:
 - Krishna Thakkar

	1	2	3	4	5	6	7	8	9	10	11	
L						L6	L7	L8	L9	L10	L11	L
K						K6	K7	K8	K9	K10	K11	K
J	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J
I	I1	I2	Krishna Thakkar			I6	I7	I8	I9	I10	I11	I
H	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H
G	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G
F	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F
E	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E
D	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D
C	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C
B	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B
A			A3	A4	A5							A

MA 16100

FINAL

Tuesday, Dec. 13, 2022

8:00 a.m.

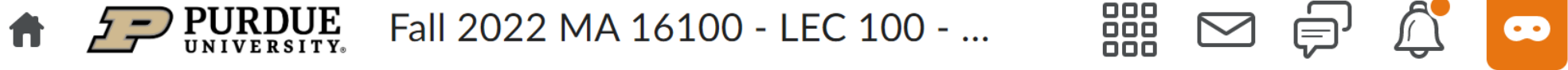
PH PHYS 223

2. ASSIGNED SEATS

Students will be assigned seats.

(posted next week)

Your room and assigned seat will be posted in the Brightspace Gradebook.



Course Home Content Classlist **Grades** Class Progress Course Tools ▾ Help ▾

3. WHAT IS THE EXAM FORMAT?

- Face-to-face and multiple-choice
- 25 Questions worth 4 points each
 - Total = $25 \times 4 = 100$
- Question order will be random

3. WHAT IS ON THE EXAM?

- Final Exam is cumulative (covers Lessons 0 – 35)
- Approximate distribution of questions:

Questions from Exam 1	Questions from Exam 2	Questions from Exam 3	Questions on New Material
Lessons 0 – 10	Lessons 11 – 19	Lessons 20 – 30	Lessons 31 – 35
6 Questions	6 Questions	6 Questions	5-6 Questions

* Plus 1-2 Questions chosen randomly

4. WHAT CAN I USE ON THE EXAM?

Notes, books, calculators, and electronic devices are not permitted.

Please bring to the exam:

Number 2 pencil

PUID

Your REC section number

Your TA's name

Put away (and turn off) all:

Notes

Textbook

Calculator

Other electronic devices

Scantron

SEE IMPORTANT MARKING INSTRUCTIONS ON SIDE 2

LAST NAME FIRST NAME MI

PURDUE UNIVERSITY IDP-11

USE A #2 PENCIL ONLY

COMPLETE ALL INFORMATION AS DIRECTED

SECTION NUMBER	TEST/QUIZ NUMBER	STUDENT IDENTIFICATION NUMBER			
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

SIGNATURE _____

DATE _____

COURSE _____

INSTRUCTOR _____

Exam Booklet

MA 16100
EXAM 2 - 10/18/2022
TEST/QUIZ NUMBER:

88

NAME _____ YOUR TA'S NAME _____

STUDENT ID # _____ RECITATION TIME _____

You must use a #2 pencil on the scantron answer sheet. Fill in the following on your scantron and blacken the bubbles

- Your name. If there aren't enough space for your name, fill in as much as you can.
- Section number with a leading zero, e.g. **0302**. (If you don't know your section number, ask your TA.)
- Test/Quiz number: **88**
- Student Identification Number: **This is your Purdue ID number with two leading zeros**
- Blacken in your choice of the correct answer on the scantron answer sheet for questions 1- 12.

There are 12 questions, each worth 8 points (you will earn 4 points for filling out your scantron correctly). Do all your work in this exam booklet. Use the back of the test pages for scrap paper. Turn in both the scantron and the exam booklet when you are finished.

If you finish the exam before 7:20, you may leave the room after turning in the scantron sheet and the exam booklet. You may not leave the room before 6:50. If you don't finish before 7:20, you MUST REMAIN SEATED until your TA comes and collects your scantron sheet and your exam booklet.

EXAM POLICIES

- Students may not open the exam booklet until instructed to do so.
- Students must obey the orders and requests by all proctors, TAs, and lecturers.
- No student may leave in the first 20 min or in the last 10 min of the exam.
- Books, notes, calculators, or any electronic devices are not allowed on the exam, and they should not even be in sight in the exam room. Students may not look at anybody else's test, and may not communicate with anybody else except, if they have a question, with their TA or lecturer.
- After time is called, students must put down all writing instruments and remain in their seats, while the TAs will collect the scantrons and the exams.
- Any violation of these rules and any act of academic dishonesty may result in severe penalties. Additionally, all violators will be reported to the Office of the Dean of Students.

I have read and understand the exam rules stated above:

STUDENT SIGNATURE: _____

6. RULES FOR ARRIVING LATE

Timer: Timer starts at 70 ¹²⁰ minutes and counts down	Late Arrivals: Can students who arrive to the exam late take the exam?	Leaving Early: Can students who finish the exam leave early?
120 min – 100 min	Yes	No
100 min – 10 min	No*	Yes
10 min – 0 min	No*	No

- Students who arrive after the first 20 minutes must talk to Dr. Hood to arrange for an alternate exam with a 20% late penalty

1. Approximate the area of the region bounded by the graph of $f(x) = 4x^2 + 1$ and the x -axis by dividing the interval $[0, 2]$ into $n = 4$ subintervals to find the left Riemann sum, L_4 .

A. $\frac{38}{3}$

B. $\frac{25}{2}$

C. 17

D. 13

E. 9

2. Consider $f(x) = x^2 - 4 \cos(x)$ on the domain $[0, 2\pi]$. The graph of $f(x)$ is concave **downward** on what interval(s)?

A. $\left(0, \frac{2\pi}{3}\right)$ and $\left(\frac{4\pi}{3}, 2\pi\right)$

B. $\left(\frac{2\pi}{3}, \frac{4\pi}{3}\right)$

C. $\left(0, \frac{\pi}{3}\right)$ and $\left(\frac{5\pi}{3}, 2\pi\right)$

D. $\left(\frac{\pi}{3}, \frac{5\pi}{3}\right)$

E. $\left(\frac{\pi}{3}, \frac{2\pi}{3}\right)$

3. Find the number c that satisfies the conclusion of the Mean Value Theorem for the function $f(x) = x + \frac{1}{x}$ on the interval $[1, 3]$.

A. $\sqrt{3}$

B. $\frac{3}{2}$

C. $\sqrt{2}$

D. $\frac{2}{\sqrt{3}}$

E. 1

4. Evaluate the limit:

$$\lim_{x \rightarrow 0} (1 + 3x)^{1/x}$$

A. e

B. $3e$

C. 3

D. 1

E. e^3

5. You are the owner of a rectangular orchard adjacent to a straight river. You have 600 feet of fence that you want to use to enclose it. No fencing is required along the river. If x is the length of a side perpendicular to the river and y is the length of the side parallel to the river, find the values of x and y that will maximize the enclosed area.

A. $x = 300$ and $y = 300$

B. $x = 150$ and $y = 300$

C. $x = 100$ and $y = 400$

D. $x = 150$ and $y = 450$

E. $x = 200$ and $y = 200$

6. Consider the function $f(x) = xe^{-x}$. On what interval is $f(x)$ both decreasing and concave upward?

- A. $(-\infty, 2)$
- B. $(1, 2)$
- C. $(1, \infty)$
- D. $(2, \infty)$
- E. $(-\infty, 1)$

7. Evaluate the limit:

$$\lim_{x \rightarrow 0} \frac{1 - \cos(2x)}{5x^3 + 4x^2}$$

- A. $\frac{1}{8}$
- B. $\frac{1}{2}$
- C. $\frac{1}{4}$
- D. $\frac{2}{15}$
- E. $-\frac{1}{30}$

8. Use linear approximation to estimate $\sqrt{99.8}$.

A. 9.99

B. 9.98

C. 9.998

D. 9.9

E. 9.8

9. A certain function $f(x)$ has the following first derivative: $f'(x) = x^2(x - 4)(x - 2)(x + 2)^2$. How many local minima does $f(x)$ have?

- A. 1
- B. 4
- C. 3
- D. 2
- E. 0

10. For the function $f(x) = 8x + \frac{6}{x^2}$, let $F(x)$ be the antiderivative that satisfies $F(1) = 1$. Find $F(2)$.

A. 10

B. 22

C. 32

D. 14

E. 16

11. Consider the function $f(x) = \frac{x^6}{30} - \frac{x^4}{12}$. How many inflection points does $f(x)$ have?

A. 2

B. 0

C. 4

D. 1

E. 3

12. A storage crate is to be built in the shape of a box with a square base. It is to have volume 10 cubic feet. The material for the base costs \$4 per square foot, the material for the lid costs \$1 per square foot, and the material for the sides costs \$2 per square foot. If a is the width of the crate and h is the height, what are the dimensions of the crate that minimizes the cost?

A. $a = \sqrt{10}$ and $h = 1$.

B. $a = \sqrt{2}$ and $h = 5$

C. $a = 2$ and $h = \frac{5}{2}$

D. $a = \sqrt{5}$ and $h = 2$

E. $a = 1$ and $h = 10$