

Regrade Policy

Exams were graded consistently using a rubric. Extra points will not be awarded if it is the student's opinion that they were marked off too many points. This would be unfair since all students who made the same mistake were marked off the same amount of points.

Students must write a short paragraph *explaining why* they think their paper should be regraded. This written request must be submitted along with the exam **by Friday 5/9 at 5pm.** (Ideally, if you want to submit a request, you would do so at office hours today or tomorrow.)

Prelim 3 Statistics

Mean: 73.6

Median: 78

Standard Deviation: 18

Frequency Distribution:

100-90: 24

89-80: 41

79-70: 31

69-60: 21

59-50: 14

<50: 14

Office Hours

The final exam is **Wednesday 5/14, 7-9:30pm in Uris Hall G01.**

Regular office hours will be held through this Wednesday 5/7, and office hours for the final are given below.

Friday (5/9)	Harry	2-4pm	218 Malott
Monday (5/12)	Joe	11am-1pm	218 Malott
	Lauren	1-2:30pm	Upson 317
Tuesday (5/13)	Tasia	10am-noon	587 Malott
	Tom	1-2:30pm	218 Malott
	David	2:30-4pm	111 Malott

Breathing is cyclic and a full respiratory cycle from the beginning of inhalation to the end of exhalation takes 5 seconds. The rate of air flow into the lungs is given by $f(t) = \frac{1}{2} \sin(2\pi t/5)$ L/s.

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Without invoking properties of $\sin^{-1}$, prove that there is a number c such that $\sin(c) = 2/3$.

Optimization I

LaVonne is considering selling saffron in her store. Her market research shows that if each ounce of saffron is priced at x dollars, with $0 \leq x \leq 1000$ she will sell $\frac{10-x}{x}$ ounces. You may assume she orders only how much she knows she can sell.

One producer will supply LaVonne with saffron at the rate of \$40 per ounce. If she uses this producer as her supplier, how should she price her saffron (per ounce) to maximize her profit?

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Optimization II

It is becoming common for people in the Finger Lakes region to breed alpacas. Lucille, a local farmer, has just purchased her first alpaca and is building a small pen for it. She is using a rectangular region with area 3,200 square feet, which will be enclosed with a fence. The two sides of the fence that run north-south require fencing materials costing \$1.00 per foot, and the other two sides require fencing materials that cost \$2.00 per foot. Find the dimensions of the region that give the smallest material cost.

Water is being poured into a cylindrical vase. The height of the water changes as more water is poured in. The instantaneous change in the height with respect to the volume of water in the vase

- (a) is constant
- (b) varies inversely as the cube of the radius
- (c) not enough information to tell.

A slow freight train chugs along a straight track. The distance it has traveled after x hours is given by a function $f(x)$. An engineer is walking along the top of the box cars at the rate of 3 mi/hr in the same direction as the train is moving. The speed of the man relative to the ground is

- a) $f(x) + 3$
- b) $f'(x) + 3$
- c) $f(x) - 3$
- d) $f'(x) - 3$

Suppose that $f''(x) < 0$ for x near a point a . Then the linearization of f at a is

- a) an over approximation
- b) an under approximation
- c) unknown without more information.

Let $f(x)$ be a differentiable function on a closed interval with $x = a$ being one of the endpoints of the interval. If $f'(a) > 0$ then,

- a) f could have either an absolute maximum or an absolute minimum at $x = a$.
- b) f cannot have an absolute maximum at $x = a$.
- c) f must have an absolute minimum at $x = a$.

A boneless baked turkey breast that is ten inches long from one end to the other is sliced up in to very thin slices. Each slice has a cross-sectional area of $-x^2 + 10x$ square inches for each x between 0 and 10. What is the volume of the turkey breast?

A sprinter practices by running various distances back and forth in a straight line in a gym. Her velocity at t seconds is given by the function $v(t)$. What does $\int_0^{60} |v(t)| dt$ represent?

- a) The total distance the sprinter ran in one minute
- b) The sprinter's average velocity in one minute
- c) The sprinter's distance from the starting point after one minute
- d) None of the above

True or False.

If f is continuous on $[a, b]$, then $\frac{d}{dx} \left(\frac{d}{dx} \int_a^b f(x) dx \right) = f(x)$.