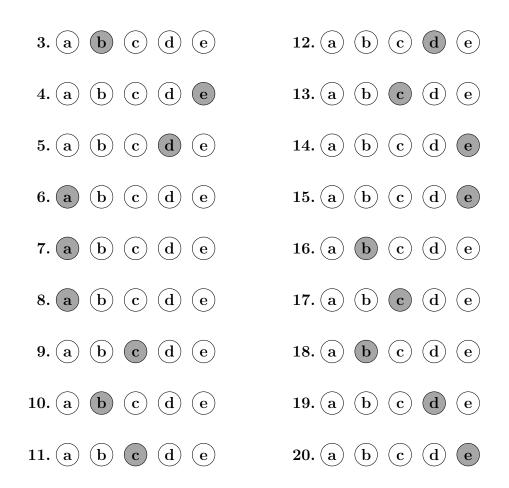
${f MA}~123$ Fall 2024 Elementary Calculus	${f Exam}_{12/18/24}{f 4}$	Name: Grader	
		Student ID #: 9	Sec:
Do not remark to answer page — you will turn in the entire exam. You have two hours and ones exam. No books whot may be used. You may use an ACT-approved calculator during the xam but NO calculated ith example a puter Algebra System (CAS), networking, or camera is permitted a positive model of phonon and the maximum and an allowed.			
$qu\epsilon$ is on the basis of this particular function of the second	age, and record your on, you will need to	18 multiple choice questions. As answers to the multiple choic of fill in the circle correspondit \mathbf{c} $\mathbf{(c)}$ $\mathbf{(d)}$ $\mathbf{(e)}$	Ş

It is your responsibility to make it CLEAR which response has been chosen. You will not get credit unless the correct answer has been clearly marked on this page.



GOOD LUCK!

Short Answer Questions

Each question is an opportunity to earn 5 points. Points are earned on the clarity and correctness of your work, not merely on having a correct answer somewhere.

1. Determine the maximum value of $f(x) = x^3 - 12x^2 + 36x$ on the interval [-5, 4]. Show all work and circle your final answer. You can use a calculator to check your answer, but credit is only given for methods that use calculus.

maximum = 32

2. Use *u*-substitution to evaluate
$$\int_{1}^{2} \frac{x^{7}+1}{\sqrt{x^{8}+8x}} dx$$
.

$$\int_{1}^{\infty} \frac{x^{7} + 1}{\sqrt{x^{8} + 8x}} dx = \frac{1}{4} \left(\sqrt{272} - 3 \right) \approx 3.3731056$$