**MATH 208 Final Exam Fall 2020**

**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Each problem is worth 7 points. 210 possible points or 10 extra points possible.

**SHOW ALL WORK!!!**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find the equation of the line through

the points (5, -2) and (7,2). Write the

result in y=mx+b form.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find the equation of the line tangent

to the curve at x=2. Write the result in y=mx+b

form.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find

In problems 5-9, identify all relative extrema and points of inflection and sketch

5a.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5b.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6**.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Relative maximum point, if any?

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Relative minimum point, if any?

8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Inflection point, if any ?

9. Sketch the graph y

x

In Problems 10 - 19, differentiate and simplify, if possible.

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If find all values of x where the tangent line is horizontal.

21. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ The total cost in dollars of producing x cell phones is . Find the **exact cost** of producing the 51st cell phone.

22. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Use **marginal cost to estimate** the cost of producing the 51st cell phone for problem number 21.

23. The price, *p*, in dollars and the demand *x* for an Aaron Jones jersey are related by the equation

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Solve for the price *p*
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find the revenue R(*x*) from the sale of *x* jerseys.

24. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Suppose is the total revenue from the sale of UWM Panther Baseball hats. Find the marginal revenue for the sale of the 400th hat.

25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Suppose the price-demand equation for a product is find E(*P*), the elasticity of demand.

26a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If find the price P that results in unit elasticity of demand

26b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ would result in demand being elastic

27a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Use the price-demand equation

to find if P=$28

27b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If the $28 price is decreased by 6%, what is the approximate percentage change in demand?

28. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find the present value of $62,000 due 5 years later at 3% compounded quarterly.

29. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find effective rate or APY for an APR of 4.9% compounded monthly. Round answer to nearest tenth of a percent.

30. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ How long will it take for $9,000 to double if interest is paid at 3.5% per year compounded continuously?