

Review Problems for MAT 133

1. Let $f(x) = 3x + 5$. What is $f^{-1}(11)$?
2. Find an equation of the tangent line to the graph of the curve $y = 6 \sin x - x + 2$ at the point $(0, 2)$.

3. Let

$$f(x) = xe^{5x}.$$

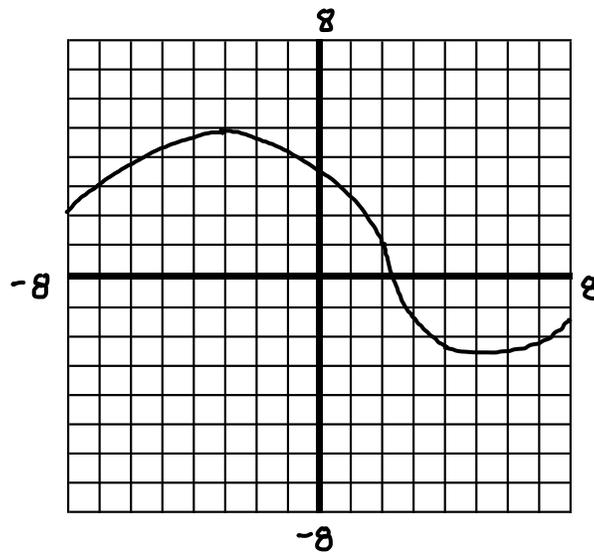
Determine $f'(x)$.

4. Determine

$$\lim_{x \rightarrow 3} \frac{x^2 - 4x + 3}{x - 3}.$$

5. Find the maximum and minimum values of the function $f(x) = x^3 - 3x^2 + 5$ on the interval $[1, 4]$.

6. Here is the graph of a function $f(x)$:



What are the values of x where $f'(x) > 0$? Give an example of a value of x with $f''(x) = 0$.

7. Find the area of the region bounded by $y = 0$, $x = 2$, and the curve $y = x^2$.

8. Find

$$\int x \sqrt{x^2 + 1} dx.$$