

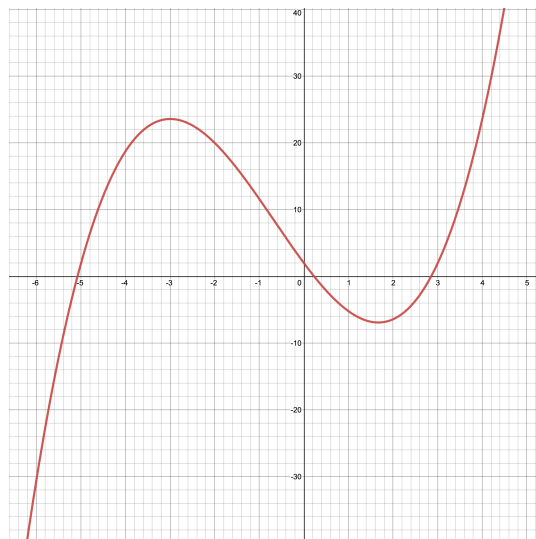
PROBLEM SET #1

Due Friday, September 6, 2024 @ 12:30 pm
Submit as single pdf file to Canvas

Remember that you need to explain and show the steps in your answers!

- Let $f(x) = x^3 - 5x$, $g(x) = x - 4$, and $h(x) = x + 2$.
 - Evaluate $(f \circ g \circ h)(-3)$
 - How is the graph of $y = (f \circ g)(x)$ related to the graph of $y = f(x)$?
 - How is the graph of $y = (h \circ f)(x)$ related to the graph of $y = f(x)$?
- The graph of $y = f(x)$ is shown below.

- Is $f(-2)$ positive, negative or zero? Explain.
- Is $f'(-2)$ positive, negative or zero? Explain.
- Give a value $x = a$ where $f(a) < 0$ and $f'(a) > 0$. Explain.



Graph of $y = f(x)$

- Use the graph of $y = f(x)$ from Problem 2.
 - Copy the graph of $y = f(x)$ and sketch a graph of $y = f'(x)$ on the same set of axes.
 - Is $f''(-3)$ positive, negative, or zero? Why?
- Solve the equation $\ln(x^2 + 4) = 2$ for x . Be sure to show your steps.