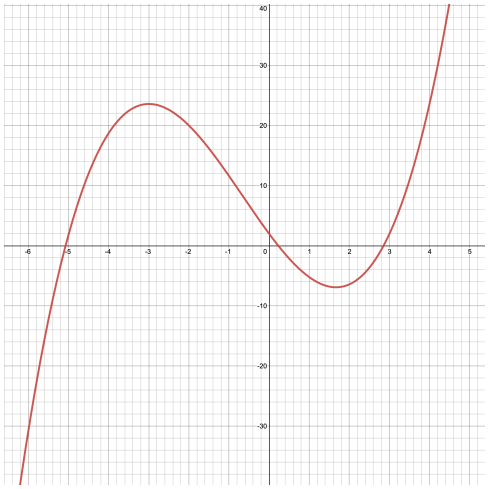
Problem Set #1

Due Friday, September 11, 2026 @ 12:30 pm
Submit as single pdf file to Canvas

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

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

2. The graph of $y = f(x)$ is shown below.
   (a) Is $f(-2)$ positive, negative or zero? Explain.
   (b) Is $f'(-2)$ positive, negative or zero? Explain.
   (c) Give a value $x = a$ where $f(a) < 0$ and $f'(a) > 0$. Explain.



Graph of $y = f(x)$

3. Use the graph of $y = f(x)$ from Problem 2.
   (a) Copy the graph of $y = f(x)$ and sketch a graph of $y = f'(x)$ on the same set of axes.
   (b) Is $f''(-3)$ positive, negative, or zero? Why?

4. Your best friend decides that they must acquire a top-of-the-line Pixel 10 Pro Fold phone, which costs $2149. Unfortunately, they plan to use their credit card, which has a 23.80% annual percentage rate, to finance the purchase.
   (a) If they make no payments for one year, how much will they owe?
   (b) If they make no payments for two years, how much will they owe?
   (c) Approximately how long will it take before the balance owed doubles?