QUIZ 3 - MATH 111   Friday, September 13

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Read each problem **very carefully** before starting to solve it and do only what is asked.
Each problem is worth around 5 points. It is necessary to show **all** your work. Correct
answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Consider the function $f(x) = x^2 - 7x$.

    (a) Find the average rate of change of f over the interval $[-1, 4]$.

    (b) Find the average rate of change of f over $[-2, a]$. Please, simplify.

2. [4 points] Consider the function $y = f(x)$ whose graph is shown.
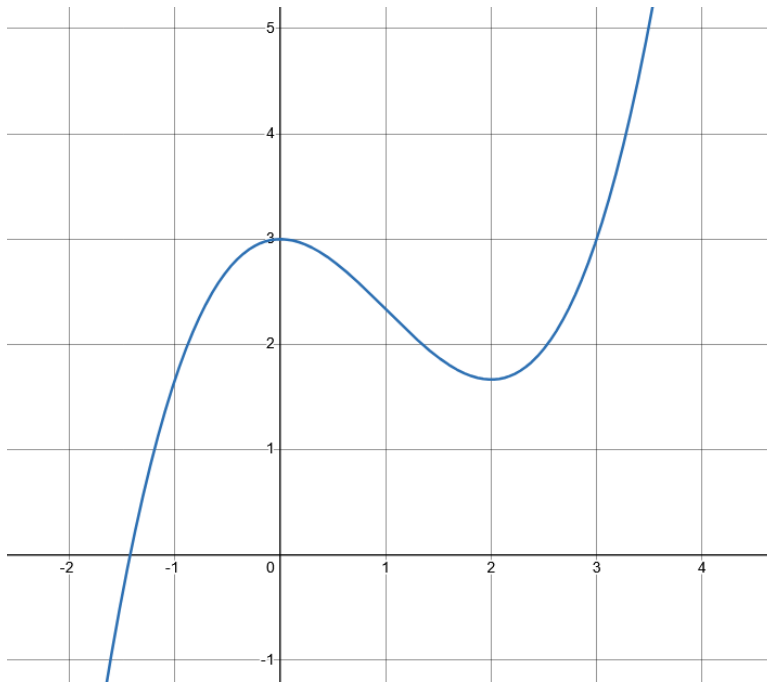
(a) Find the intervals over which f is increasing.

(b) Find the intervals over which f is decreasing.

(c) Find the local max and local min (if any).

3. [4 points] Consider the functions

$$f(x) = x + 1, \quad g(x) = \frac{x^2 + 3}{x + 1}, \quad h(x) = \sqrt{5x + 6}.$$

(a) Find a formula for $g \circ f$.

(b) Compute $(h \circ g)(1)$.