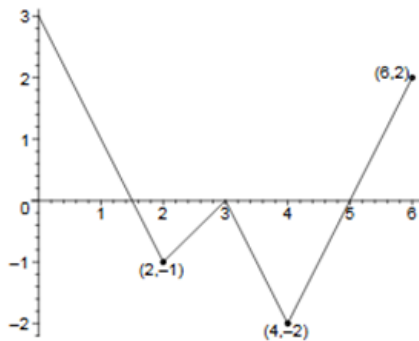


Show and label your work with proper notation. Use complete math sentences. Rationalized, simplified, and factored answers.

1. _____ 1. The graph below is the graph of $g'(x)$. If $g(0) = 10$



a) Fill in the table:

x	0	1	2	3	4	5	6
$g(x)$	10						

b) $\text{Max}(x, y)$: _____ $\text{Min}(x, y)$: _____ Find the abs max and min values of $g(x)$ for $x \in [0, 6]$ and where they occur.

c) _____ Where is the graph of $g(x)$ concave up? (Answer with open intervals).

2. Write the following limit as a definite integral: $\lim_{n \rightarrow \infty} \sum_{i=1}^n \sin 2 \left(\frac{3}{2} + \frac{3i}{n} \right) \left(\frac{2}{n} \right)$. Explain your reasoning by finding $f(x)$ and c_i .

3. _____ Find the critical points of the function $y = \left(\int_0^x \tan t \, dt \right)^3$.

4. _____ Calculate the average value of $f(x) = \cos^2 x$ on the interval $\left[\frac{\pi}{6}, \frac{\pi}{4} \right]$.

5. _____ Integrate: $\int_0^4 |\sqrt{x} - 1|$

6. _____ Calculate $y = \int \tan(2x + 1) dx$

7. _____ **Set up** (only) a right endpoint rule with 4 subintervals to approximate $y = \int_{-1}^7 \sqrt{x^3 + 1} dx$.

_____ a) Is this an over or under estimate? Why?

_____ b) What kind of rectangles are you using?

8. _____ Evaluate $\int_{-\pi/2}^{\pi/2} \frac{\sin x}{x^4 + x^2 + 1}$