

FUN		
2	Topics: 5.8	Sketching Graphs of Functions and Their Derivatives
2	Topics: 5.9	Connecting a Function, Its First Derivative, and Its Second Derivative
Learning Objective FUN-4.A: Justify conclusions about the behavior of a function based on the behavior of its derivatives.		

Warm up: $g'(x) = (x - 2)(x + 3)^2$ on $[-10, 10]$

- a. Find the critical values for $g(x)$.

- b. At what x -value(s) does $g(x)$ have a relative maximum? Explain your reasoning.

- c. On what interval(s) is $g(x)$ decreasing? Explain your reasoning.

- d. On what interval(s) is $g(x)$ concave up? Explain your reasoning.

- e. At what x -value(s) does $g(x)$ have a point of inflection? Explain your reasoning.

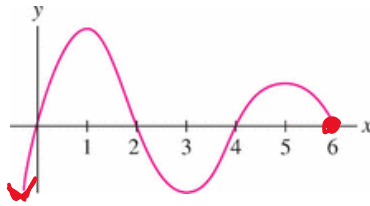


FIGURE 1

1. Determine the intervals on which $f(x)$ is increasing or decreasing, assuming that **Figure 1** is the graph of $f'(x)$. Justify your answer.

2. Determine what values of x on which $f(x)$ has a relative minimum or maximum, assuming that **Figure 1** is the graph of $f'(x)$. Justify your answer.

3. Determine the intervals on which $f(x)$ is concave up and concave down, assuming that **Figure 1** is the graph of $f'(x)$. Justify your answer.

4. At what x -value(s) does $f(x)$ have a point of inflection, assuming that **Figure 1** is the graph of $f'(x)$. Justify your answer.

5. The second derivative f'' is shown in **Figure 2**. Which of (A) or (B) is the graph of f and which is f' ?

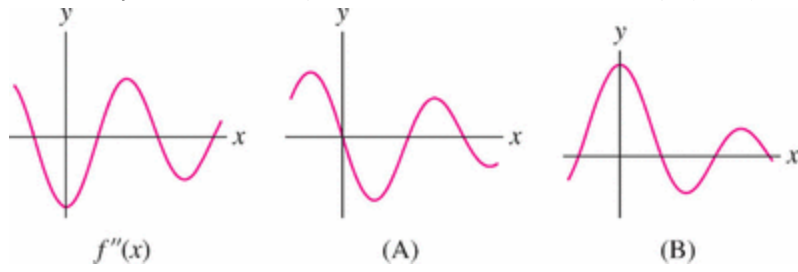


FIGURE 2

6. In **Figure 3**, shows f, f', f'' . Determine which is which.

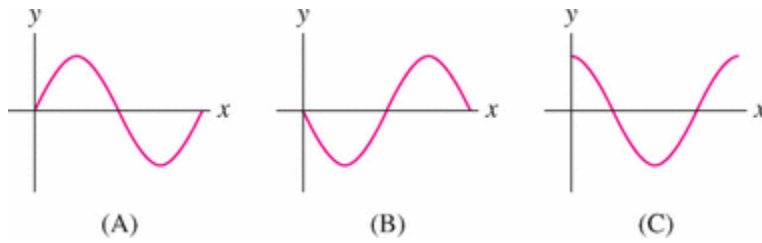


FIGURE 3

7. **Figure 4** shows f, f', f'' . Determine which is which.

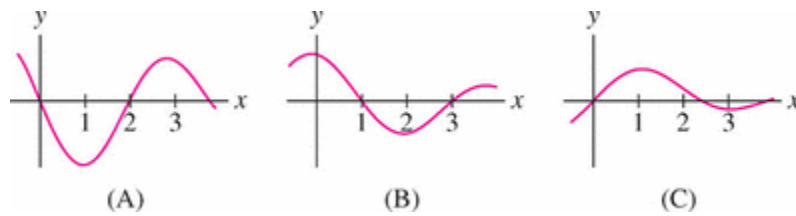


FIGURE 4