Classroom Voting Questions: Calculus II

Section 6.1 Antiderivatives Graphically and Numerically

1. Which of the graphs (a-d) could represent an antiderivative of the function shown in Figure 6.1.

![Figure 6.1](image1)

2. Which of the graphs (a-d) could represent an antiderivative of the function shown in Figure 6.2.

![Figure 6.2](image2)

3. Consider the graph of $f'(x)$ shown below. Which of the functions with values from the table could represent $f(x)$?
1. (a) only
2. (a), (b), and (c) only
3. All of them
4. None of them

4. Figure 6.4 shows $f'(x)$. If $f(2) = 5$, what is $f(0)$?

(a) 0
(b) 3
(c) 7
(d) Can’t tell

5. The graph of $f$ is given below. Let $F'(x) = f(x)$. Where does $F$ have critical points?
6. The graph of $f$ is given below. Let $F'(x) = f(x)$. Where does $F$ have a global max on $[0, 2\pi]$?

(a) $x = 0, \pi, 2\pi$
(b) $x = \pi$
(c) $x = \pi/2, 3\pi/2$
(d) None of the above

7. The derivative, $f'$, of a function $f$ is plotted below. At approximately what value of $x$ does $f$ reach a maximum, on the range $[0, 10]$?

(a) 1
8. The derivative, \( f' \), of a function \( f \) is plotted below. If we know that the maximum value of \( f \) on this range is 20, what is \( f(9.5) \)?

(a) \( f(9.5) \approx 6 \)
(b) \( f(9.5) \approx 14 \)
(c) \( f(9.5) \approx -14 \)
(d) \( f(9.5) \approx 34 \)

9. The derivative, \( f' \), of a function \( f \) is plotted below. When is \( f \) concave up?

(a) \( x > 5 \)
(b) \( x < 5 \)
(c) $x < 2.5$ and $x > 7.5$
(d) $2.5 < x < 7.5$
(e) $1 < x < 4$ and $x > 9.5$

10. The graph below shows the second derivative, $f''$ of a function, and we know $f(1) = 3$ and $f'(1) = 0$. Is $f'(2)$ positive or negative?

(a) $f'(2) > 0$
(b) $f'(2) < 0$
(c) It is impossible to tell without further information.

11. The graph below shows the second derivative, $f''$ of a function, and we know $f(1) = 3$ and $f'(1) = 0$. Is $f(-3)$ bigger than 3 or smaller than 3?

(a) $f(-3) > 3$
(b) $f(-3) < 3$
(c) It is impossible to tell without further information.
12. The figure below is the graph of $f'(x)$. Where is the global maximum of $f$ on $[-4, 4]$?

(a) $x = -3.2$
(b) $x = -2$
(c) $x = -0.8$
(d) $x = 2$
(e) $x = 4$