

Name Answer Key

Period Date

2.6 to 2.8 Test Review

Page 165 (30, 32, 34-36, 39, 40, 48) and the problems below.

1. What is the average rate of change of the function f given by $f(x) = x^3 + 2x - 1$ on the closed interval $[0, 2]$?

$$\begin{array}{l} f(0) = -1 \\ f(2) = 11 \end{array} \quad \frac{f(2) - f(0)}{2 - 0} = \frac{11 - (-1)}{2} = \textcircled{6}$$

2. If $f(3) = -2$ and $f'(3) = 5$, find an equation of the tangent line at $x = 3$.

$$\begin{array}{l} (3, -2) \quad m = 5 \\ y - (-2) = 5(x - 3) \\ y + 2 = 5x - 15 \\ \boxed{y = 5x - 17} \end{array}$$

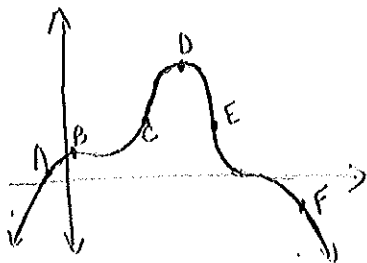
3. At which of the given points does the given graph satisfy the following?

a. $f'(x)$ is positive and $f''(x)$ is positive \uparrow CU

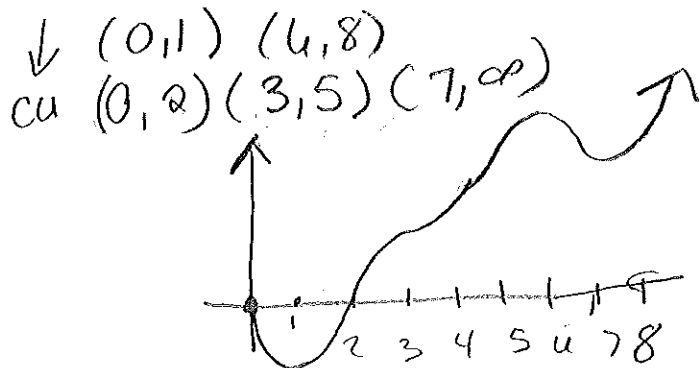
b. $f'(x)$ is positive and $f''(x)$ is negative \uparrow CD

c. $f'(x)$ is negative and $f''(x)$ is positive \downarrow CU

d. $f'(x)$ is negative and $f''(x)$ is negative \downarrow CD

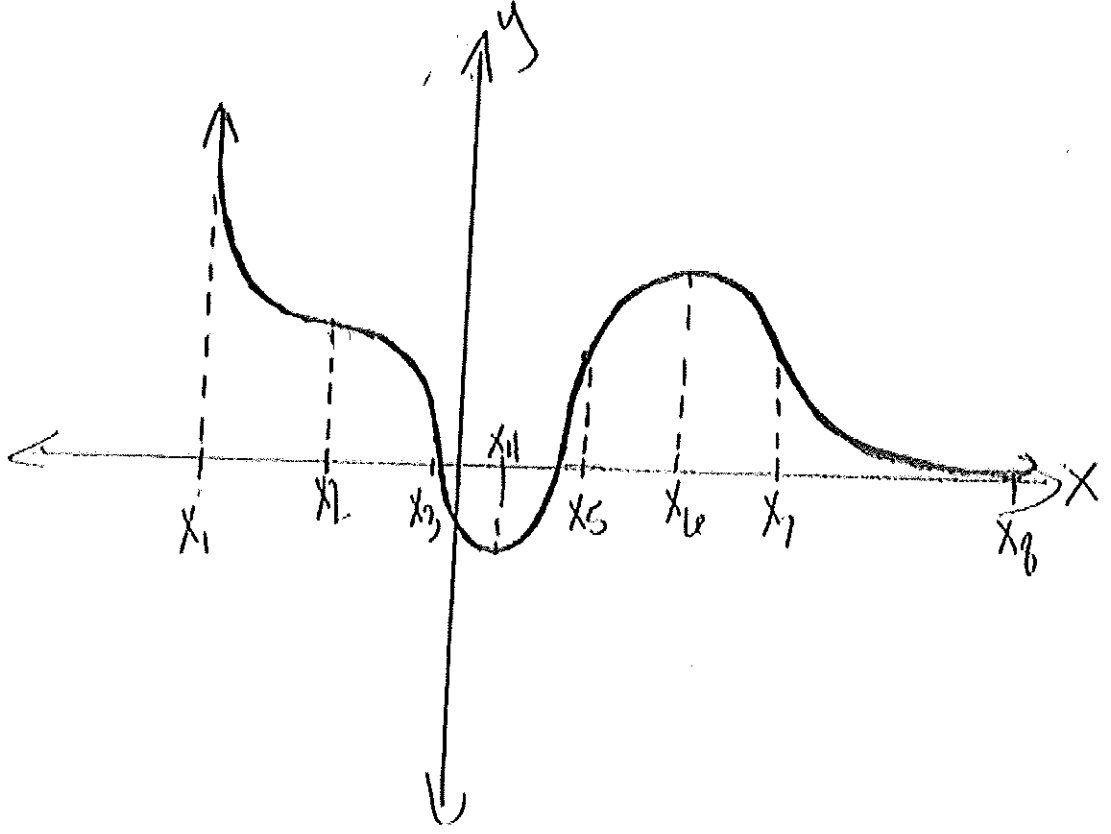


4. Given the graph of $y = f'(x)$ and that $f(0) = 0$, sketch a possible graph for $y = f(x)$.

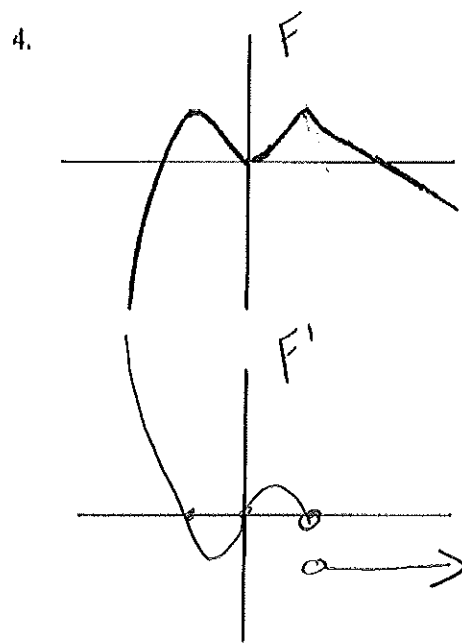
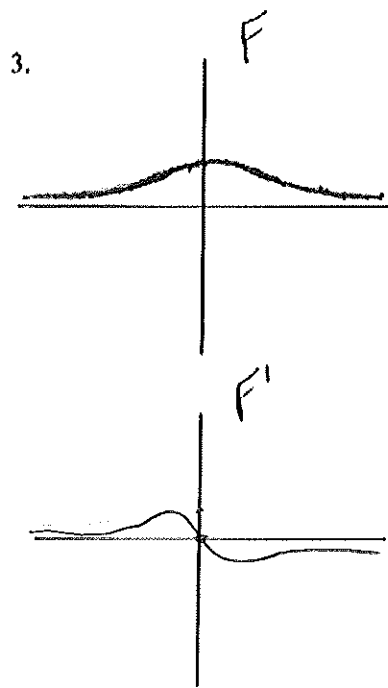
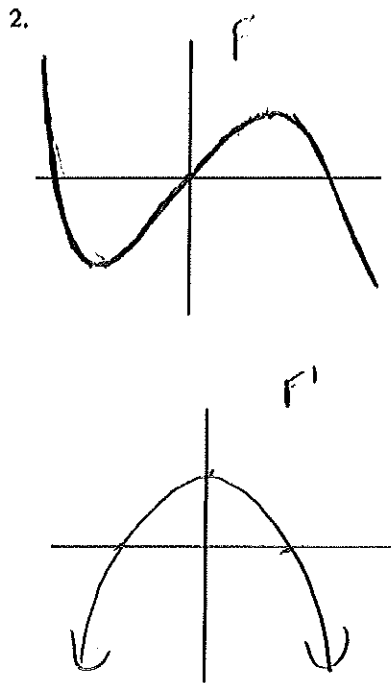
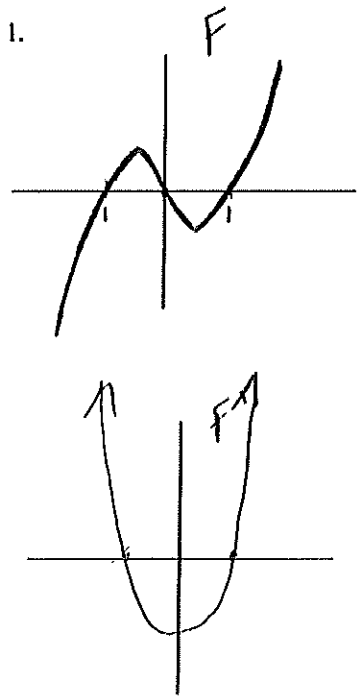


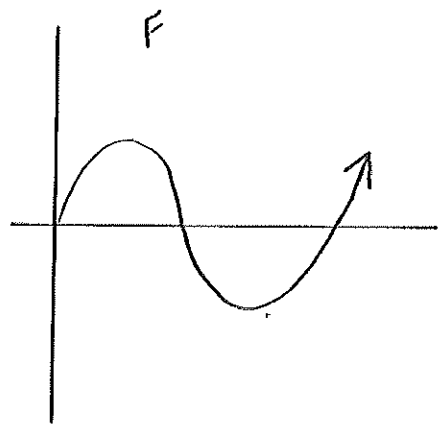
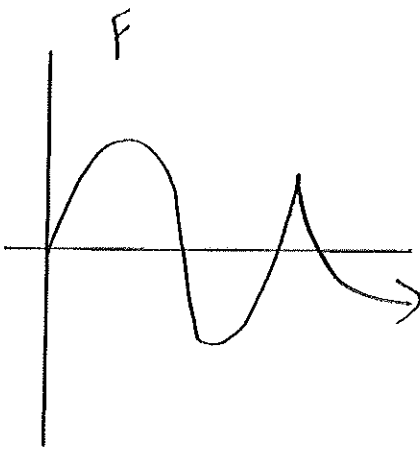
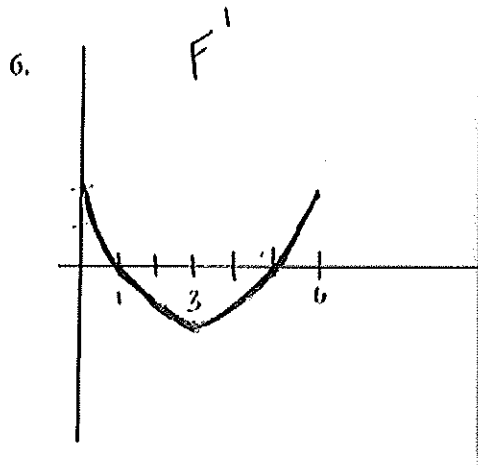
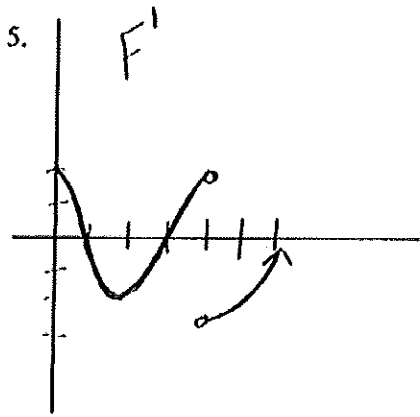
5. Given the graph of $y = f(x)$, answer the following questions.

- | | | |
|--|---|--|
| a. $f'(x) > 0$
(x_4, x_6) | b. $f'(x) < 0$
$(-\infty, x_4) (x_6, \infty)$ | c. $f'(x) = 0$
x_1, x_4, x_6 |
| d. f is increasing
same as a | e. f is decreasing
same as b | f. $f''(x) > 0$
$(-\infty, x_2) (x_3, x_5)$ |
| g. $f''(x) < 0$
$(x_2, x_3) (x_5, x_7)$ | h. f has an inflection point.
x_2, x_3, x_5, x_7 | i. f is increasing
same as f |
| | j. f is decreasing.
same as g | |



For each graph, graph the corresponding derivative graph or antiderivative graph as indicated.





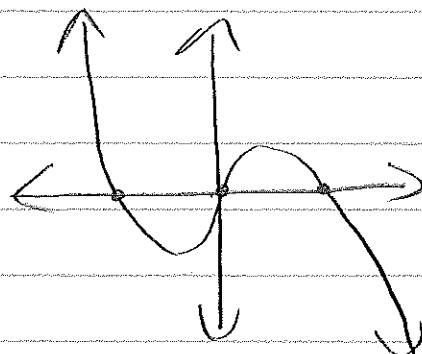
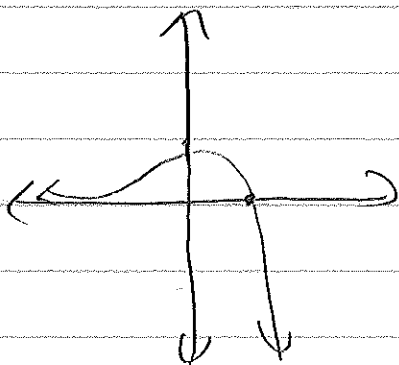
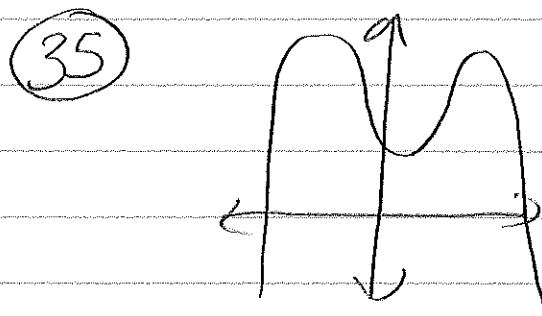
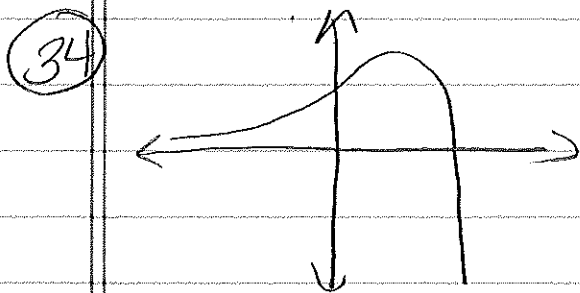
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(30) a) $\lim_{h \rightarrow 0} \frac{(x+h)^3 - 2(x+h) - x^3 + 2x}{h}$
 $= 3x^2 - 2 = f'(x)$
 $f'(2) = 10$

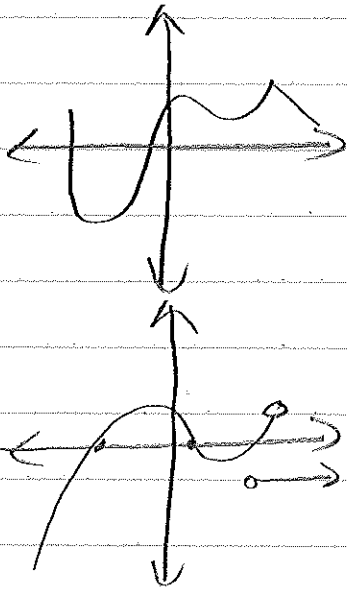
b) $y - 4 = 10(x - 2)$ or $y = 10x - 16$

c) graph

(32) $f(x) = x^6$ $a = 2$



36



39

$x = -4$ jump
 $x = -1$ corner
 $x = 2$ infinity
 $x = 5$ vertical tangent

40

$$s = a$$
$$s' = c$$
$$s'' = b$$

48

