

2.3 The Derivative of a Function

Name:

Date:

P 15. Sketch the graph of $f(x) = x(x - 1)$, and use this graph to sketch $f'(x)$.

P 22. Find a formula for the derivative of $m(x) = 1/(x + 1)$ using difference quotients.

P 24. Draw a possible graph of $y = f(x)$ given the following information of about its derivative.

- $f'(x) > 0$ for $x < -1$.
- $f'(x) < 0$ for $x > -1$.
- $f'(x) = 0$ at $x = -1$.

P 26. Given the numerical values shown, find approximate values for the derivative of $f(x)$ at each of the x -values given. Where is the rate of change of $f(x)$ positive? Where is it negative? Where does the rate of change of $f(x)$ seem to be greatest?

x	0	1	2	3	4	5	6	7	8
$f(x)$	18	13	10	9	9	11	15	21	30

P 53. Explain what is wrong with the statement:

“A function, f , whose graph is above the x -axis for all x has a positive derivative for all x .”

P 54. Explain what is wrong with the statement:

“If $f'(x) = g'(x)$ then $f(x) = g(x)$.”

P 59. Is the statement true or false? Give an explanation for your answer.

“If $f'(x)$ is increasing, then $f(x)$ is also increasing.”