

In the following problems, Identify:

Critical numbers, Intervals of Increasing and Decreasing, Extreme values

$$10. y = x + \frac{4}{x}$$

$$19. f(x) = \frac{x^5 - 5x}{5}$$

$$21. f(x) = x^{1/3} + 1$$

$$23. f(x) = (x - 1)^{2/3}$$

$$27. f(x) = x + \frac{1}{x}$$

$$29. f(x) = \frac{x^2}{x^2 - 9}$$

$$31. f(x) = \frac{x^2 - 2x + 1}{x + 1}$$

In Exercises 33–36, consider the function on the interval  $(0, 2\pi)$ . Find the open intervals on which the function is increasing or decreasing and locate all relative extrema. Use a graphing utility to confirm your results.

33.  $f(x) = \frac{x}{2} + \cos x$

34.  $f(x) = \sin x \cos x$

35.  $f(x) = \sin^2 x + \sin x$

36.  $f(x) = \frac{\sin x}{1 + \cos^2 x}$

57. **Think About It** The function  $f$  is differentiable on the interval  $[-1, 1]$ . The table shows the values of  $f'$  for selected values of  $x$ . Sketch the graph of  $f$ , approximate the critical numbers, and identify the relative extrema.

$x$	-1	-0.75	-0.50	-0.25
$f'(x)$	-10	-3.2	-0.5	0.8

$x$	0	0.25	0.50	0.75	1
$f'(x)$	5.6	3.6	-0.2	-6.7	-20.1