

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PER \_\_\_\_\_ SCORE \_\_\_\_\_

**Curve Sketching****Increasing Decreasing:** Find the intervals on which  $f(x)$  is increasing and decreasing.

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

2)  $f(x) = 4 - 2\ln(x-3)$

**Concavity:** Find the intervals on which  $f(x)$  is concave up and concave down.

3)  $f(x) = 2x^3 - x^2 + 1$

4)  $f(x) = -e^{-x} + 2e^{-2x}$

**Extreme Values:** Find the absolute maxima and minima.

5)  $f(x) = 3x^{1/3} - 6x^{-2/3}$ ,  $[-5, -1]$

6)  $f(x) = x^3 - 12x^2 + 21x$ ,  $[0, 2]$

**Using a Table:** Let  $f$  be a function that is even and continuous on the closed interval  $[-5, 5]$ . The function  $f$  and its derivatives have the properties indicated in the table below.

$x$	$-5 < x < -2$	$-2$	$-2 < x < 0$	$0$	$0 < x < 2$	$2$	$2 < x < 5$
$f(x)$	POS	1	POS	3	POS	4	POS
$f'(x)$	NEG	0	POS	1	POS	0	NEG
$f''(x)$	POS	2	POS	0	NEG	4	NEG

7) Find the intervals in which  $f$  is increasing.

8) Find the intervals in which  $f$  is concave down.

9) Identify the inflection points.

10) Identify the absolute maximum.

11) Sketch the graph of a function with the given characteristics of  $f$ .

