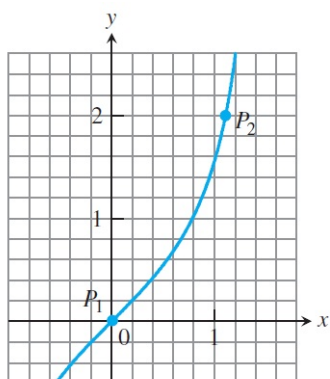# Derivative of Function of One Variable

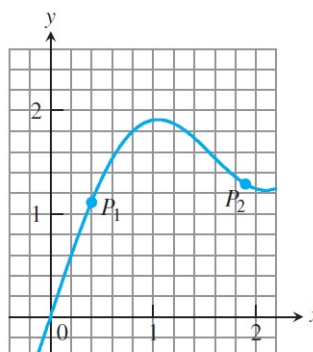## Slopes & Tangent Lines

Use the grid and a straight edge to make a rough estimate of the slope of the curve (in y–units per x–unit) at the points P_1 and P_2.
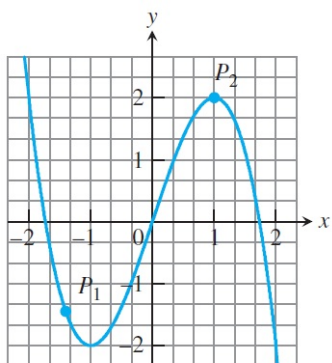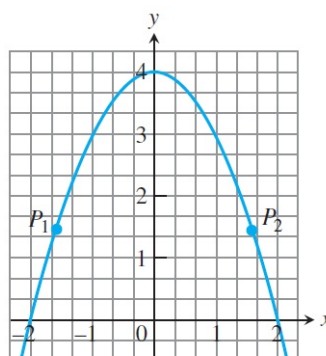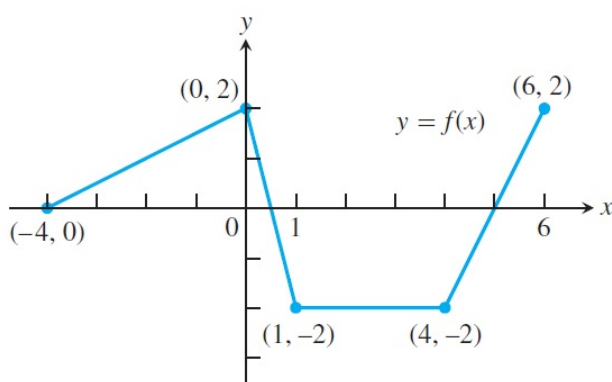
1 .

3 .

2 .

4 .

Graphs

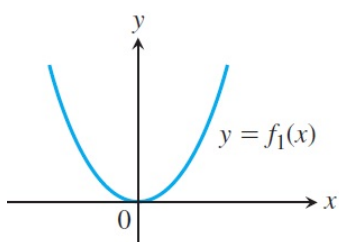1. The graph in the accompanying figure is made of line segments joined end to end.

1.1 At which points of the interval $[-4, 6]$ is f' not defined? Give reasons for your answer.
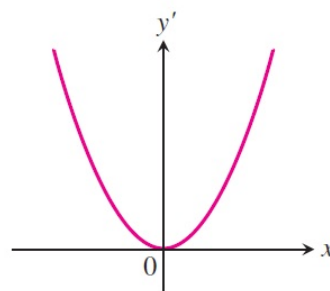
1.2 Graph the derivative of f.

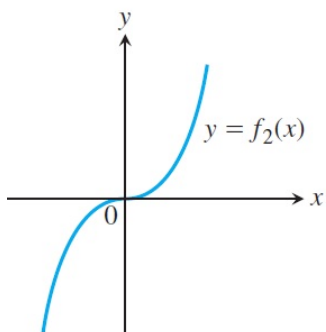2. Match the functions graphed with the derivatives graphed in Exercises 2.1–2.4 the accompanying figures (a)–(d).
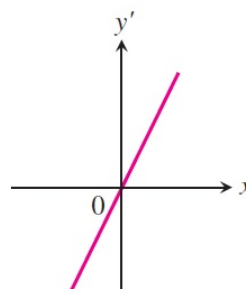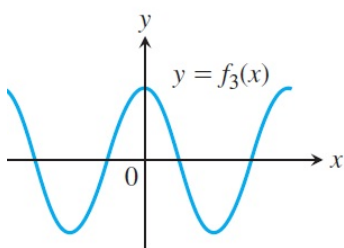
2.1 .

$y = f_1(x)$
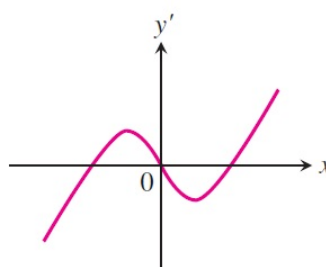
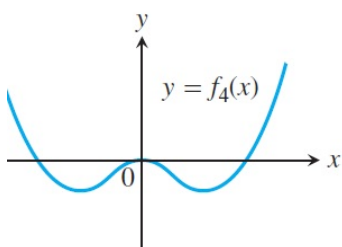(a) .

2.2 .

$y = f_2(x)$

(b) .

2.3 .

$y = f_3(x)$

(c) .

2.4 .

$y = f_4(x)$
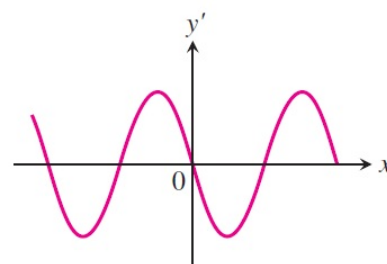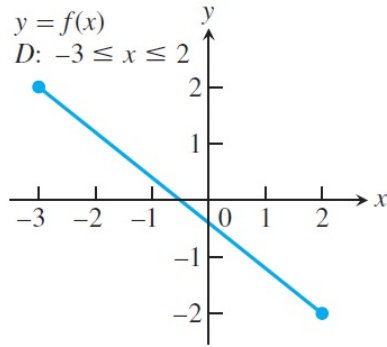
(d) .

Differentiability & Continuity on an Interval

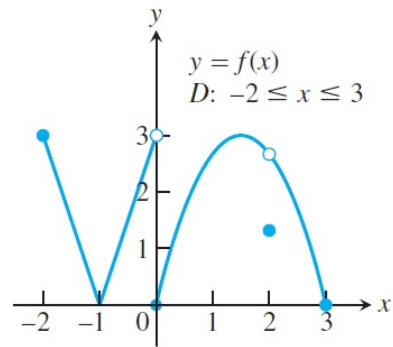Each figure in Exercises 1–6 shows the graph of a function over a closed interval D. At what domain points does the function appear to be

    (a) differentiable?

    (b) continuous but not differentiable?
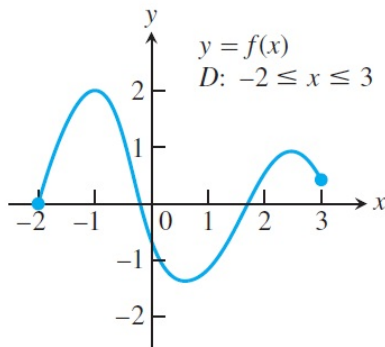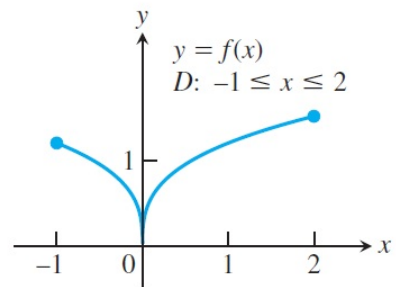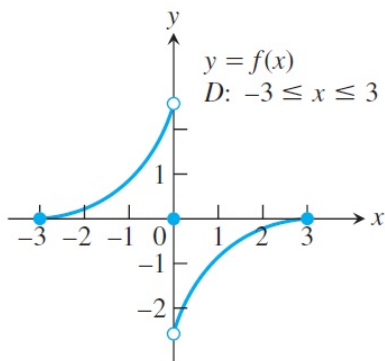
    (c) neither continous nor differentiable?

1. .

$y = f(x)$
$D: -3 \le x \le 2$

2. .

$y = f(x)$
$D: -2 \le x \le 3$

3. .

$y = f(x)$
$D: -3 \le x \le 3$

4. .

$y = f(x)$
$D: -2 \le x \le 3$

5. .

$y = f(x)$
$D: -1 \le x \le 2$

6. .

$y = f(x)$
$D: -3 \le x \le 3$