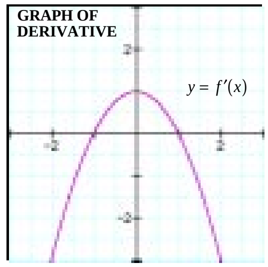
Problems for Gateway #2: Interpreting the Graph of the Derivative

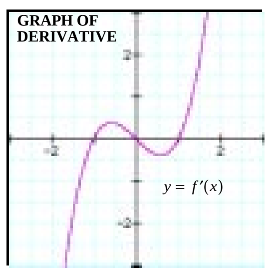
1. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local maximum at:

(a) $x = 1$ only.
(b) $x = -1$ only.
(c) $x = 1$ and $x = -1$ only.
(d) a point near $x = 0.5$ only.
(e) a point near $x = -0.5$ only.

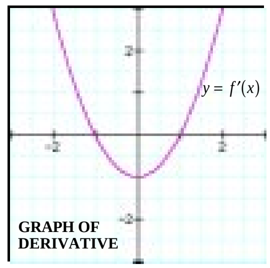
2. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local minimum at:

(a) $x = 1$ only.
(b) $x = 1$ and $x = -1$ only.
(c) $x = -1$ only.
(d) a point near $x = 0.5$ only.
(e) a point near $x = -0.5$ only.

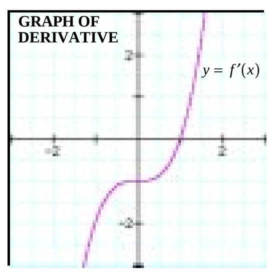
3. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local maximum at:

(a) $x = 1$ only.
(b) $x = 1$ and $x = -1$ only.
(c) $x = -1$ only.
(d) a point near $x = 0.5$ only.
(e) a point near $x = -0.5$ only.

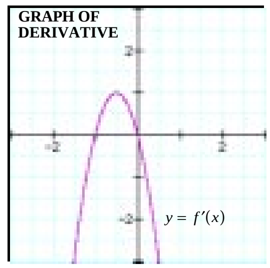
4. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local minimum at:

(a) $x = 1$ and $x = 0$ only.
(b) $x = -1$ only.
(c) $x = 0$ only.
(d) $x = 1$ only.
(e) The original function does not have any local minimums.

5. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local maximum at:

(a) $x = 1$ only.
(b) $x = -1$ only.
(c) $x = 1$ and $x = -1$ only.
(d) a point near $x = -0.5$ only.
(e) $x = 0$ only.

6. The **DERIVATIVE** of a function is defined by the equation given below.

$$f'(x) = 4x(x-1).$$

The **ORIGINAL FUNCTION** f has a local maximum at:

(a) $x = 1$ only.
(b) $x = -1$ only.
(c) $x = 1$ and $x = -1$ only.
(d) a point near $x = -0.5$ only.
(e) a point near $x = 0$ only.

7. The **DERIVATIVE** of a function is defined by the equation given below.

$$f'(x) = x^3 - 1.$$

The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local minimum at:

(a) $x = 1$ and $x = 0$ only.
(b) $x = -1$ only.
(c) $x = 0$ only.
(d) $x = 1$ only.
(e) The original function does not have any local minimums.

8. The **DERIVATIVE** of a function is defined by the equation given below.

$$f'(x) = x^2 - 1.$$

The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local maximum at:

(a) $x = 1$ only.
(b) $x = 1$ and $x = -1$ only.
(c) $x = -1$ only.
(d) a point near $x = 0.5$ only.
(e) a point near $x = -0.5$ only.

9. The **DERIVATIVE** of a function is defined by the equation given below.

$$f'(x) = x(x-1)(x+1).$$

The graph of the **ORIGINAL FUNCTION** $y = f(x)$ has a local minimum at:

(a) $x = 1$ only.
(b) $x = 1$ and $x = -1$ only.
(c) $x = -1$ only.
(d) a point near $x = 0.5$ only.
(e) a point near $x = -0.5$ only.

10. The **DERIVATIVE** of a function is defined by the equation given below.

$$f'(x) = 1 - x^2.$$

The **ORIGINAL FUNCTION** f has a local maximum at:

(a) $x = 1$ only.
(b) $x = -1$ only.
(c) $x = 1$ and $x = -1$ only.
(d) a point near $x = 0.5$ only.
(e) a point near $x = -0.5$ only.

ANSWERS:

1.	A	**2.**	B	**3.**	C	**4.**	D
5.	E	**6.**	E	**7.**	D	**8.**	C
9.	B	**10.**	A				