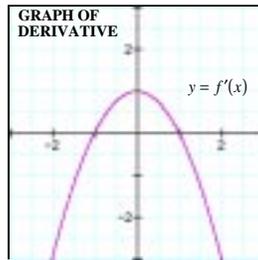


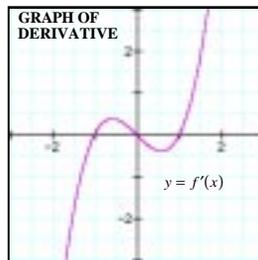
Problems for Gateway #2: The Derivative and Increasing/Decreasing

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



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ is increasing on the intervals:

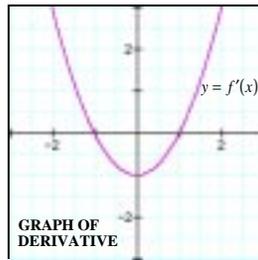
- (a) $(-1, 1)$ only.
 - (b) $(-1, 1)$ and $(1, \infty)$ only.
 - (c) $(-\infty, -1)$ and $(1, \infty)$ only.
 - (d) $[-1, 1]$ only.
 - (e) $[-1, 1)$ only.
2. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ is increasing on the intervals:

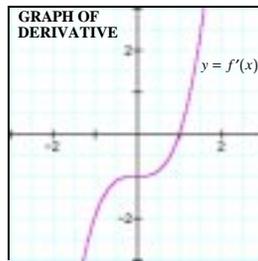
- (a) $(-1, 1)$ only.
- (b) $(-1, 0)$ and $(1, \infty)$ only.
- (c) $(-\infty, -1)$ and $(1, \infty)$ only.
- (d) $[-1, 1]$ only.
- (e) $[0, \infty)$ only.

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



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ is increasing on the intervals:

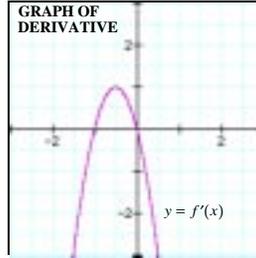
- (a) $(-1, 1)$ only.
 - (b) $(-1, 1)$ and $(1, \infty)$ only.
 - (c) $(0, \infty)$ only.
 - (d) $(-\infty, -1)$ and $(1, \infty)$ only.
 - (e) $[-1, 1)$ only.
4. The graph shown below is a graph of the **DERIVATIVE** $y = f'(x)$.



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ is increasing on the intervals:

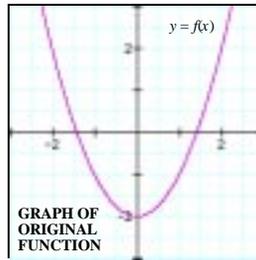
- (a) $(-1, 1)$ only.
- (b) $(-1, 1)$ and $(1, \infty)$ only.
- (c) $(-\infty, -1)$ and $(1, \infty)$ only.
- (d) $[-1, 1]$ only.
- (e) $(1, \infty)$ only.

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



The graph of the **ORIGINAL FUNCTION** $y = f(x)$ is increasing on the intervals:

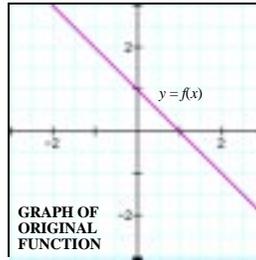
- (a) $(-1, 1)$ only.
 - (b) $(-1, 1)$ and $(1, \infty)$ only.
 - (c) $(-1, 0)$ only.
 - (d) $(-\infty, -1)$ and $(0, \infty)$ only.
 - (e) $[-1, 1)$ only.
6. The graph shown below is a graph of the **ORIGINAL FUNCTION** $y = f(x)$.



The **DERIVATIVE** $y = f'(x)$ is positive on the intervals:

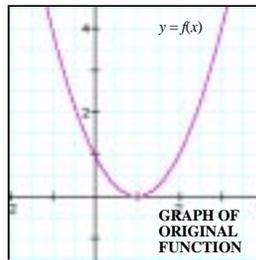
- (a) $(-1, 1)$ only.
- (b) $(0, \infty)$ only.
- (c) $(-1, 0)$ only.
- (d) $(-\infty, -1)$ and $(0, \infty)$ only.
- (e) $[-1, 1)$ only.

7. The graph shown below is a graph of the **ORIGINAL FUNCTION** $y = f(x)$.



The **DERIVATIVE** $y = f'(x)$ is positive on the intervals:

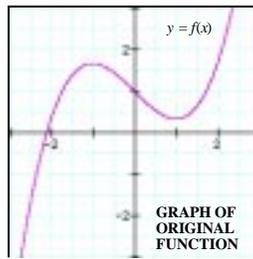
- (a) $(-1, 1)$ only.
 - (b) $(-1, 1)$ and $(1, \infty)$ only.
 - (c) $(-1, 0)$ only.
 - (d) The derivative is never positive.
 - (e) $[-1, 1)$ only.
8. The graph shown below is a graph of the **ORIGINAL FUNCTION** $y = f(x)$.



The **DERIVATIVE** $y = f'(x)$ is positive on the intervals:

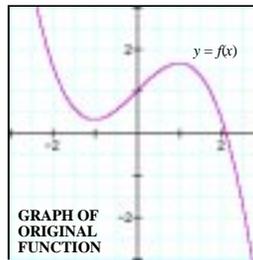
- (a) $(-1, 1)$ only.
- (b) $(-1, 1)$ and $(1, \infty)$ only.
- (c) $(-1, 0)$ only.
- (d) $(-\infty, -1)$ and $(0, \infty)$ only.
- (e) $(1, \infty)$ only.

9. The graph shown below is a graph of the **ORIGINAL FUNCTION** $y = f(x)$.



The **DERIVATIVE** $y = f'(x)$ is positive on the intervals:

- (a) $(-\infty, -1)$ and $(1, \infty)$ only.
 - (b) $(-1, 1)$ and $(1, \infty)$ only.
 - (c) $(-1, 0)$ only.
 - (d) $(-\infty, -1)$ and $(0, \infty)$ only.
 - (e) $[-1, 1)$ only.
10. The graph shown below is a graph of the **ORIGINAL FUNCTION** $y = f(x)$.



The **DERIVATIVE** $y = f'(x)$ is positive on the intervals:

- (a) $(-1, 0)$ only.
- (b) $(-1, 1)$ and $(1, \infty)$ only.
- (c) $(-1, 1)$ only.
- (d) $(-\infty, -1)$ and $(0, \infty)$ only.
- (e) $[-1, 1)$ only.

ANSWERS:

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