# Increasing / Decreasing Functions

1. Show that the curve $y = 4x^3 - 2$ is never decreasing.

2. Show that the curve with equation $y = 20 - 2x^3$ is never increasing.

3. Show that the curve with equation $y = 2x^3 + 4x$ is always increasing.

4. Show that the curve $f(x) = -3x- 5x^3$ is always decreasing.

5. Show that the curve $y = x^3 - 6x^2 + 12x - 5$ is never decreasing.

6. Show that the curve $f(x) = x^3 + 9x^2 + 27x - 4$ is never decreasing.

7. Show that the curve with equation $y = 12x^2 - 6x - 8x^3$ is never increasing.

8. Show that the curve with equation $y = -x^3 - 3x^2 - 3x$ is never increasing.

9. Show that the curve with equation $y = 2x^5 + 5$ is never decreasing.

10. Show that the curve $y = x^3 - x^2 + x$ is always increasing.

11. Find the intervals in which $y = x^3 - 3x^2 - 9x + 3$ is increasing.

12. Find the intervals in which $f(x) = x^3 - 6x^2$ is decreasing.

13. Find the intervals in which $y = 24x - 2x^3$ is decreasing.

14. Find the intervals in which $f(x) = x^3 - 3x^2$ is increasing.

15. Find the intervals in which $y = 6x - 2x^3$ is increasing.

16. Find the intervals in which the curve $f(x) = 2x^3 -6x^2 - 48x + 30$ is decreasing.