12.7) Increasing and decreasing functions

Worked example	Your turn
Show that the function $f(x) = x^3 - 3x^2 + 8x - 5$ is increasing for all real values of x.	Show that the function $f(x) = x^3 + 6x^2 + 21x + 2$ is increasing for all real values of x. Shown

Worked example	Your turn
Find the interval(s) on which the function $f(x) = x^3 - 6x^2 - 135x + 1$ is increasing.	Find the interval(s) on which the function $f(x) = x^3 + 6x^2 - 135x - 2$ is increasing.
	$x \leq -9$ and $x \geq 5$

Worked example	Your turn
Show that the function $5 - x(4x^2 + 3)$ is decreasing for all $x \in \mathbb{R}$	Show that the function $3 + 4x(-x^2 - 5)$ is decreasing for all $x \in \mathbb{R}$ Shown

Worked example	Your turn
Find the interval on which the function $f(x) = x^3 - 3x^2 - 9x - 10$ is decreasing.	Find the interval on which the function $f(x) = x^3 + 3x^2 - 9x + 5$ is decreasing. $[-3, 1]$