

ECO137 Quiz 5

$$f(x) = x^3 - 4x^2 + x + 6$$

(1) Is this function increasing/decreasing? Use 1st derivative.

(2) Is this function concave/convex? Use 2nd derivative.

(3) One of the roots of $f(x)$ is $x = -1$. Draw the figure of the function by identifying all three roots (x-intercepts), y-intercepts and the point where concavity/convexity changes.

A1 Decreasing where $x < 0.13$, increasing $0.13 < x < 2.54$ and decreasing where $x > 2.54$.

A2. Convex where $x > 4/3$, concave where $x < 4/3$.

A3. x-intercepts $(-1,0)$ $(2, 0)$ and $(3,0)$, y-intercept $(0,6)$, the point where concavity/convexity changes $x = 4/3$, $y = f(4/3)$. Draw the figure considering all these points and the results from A1 and A2.