Answer on Question #79506 - Math – Calculus

We have a function $f(x) = x^2 - x + 2$.

At first, we find a derivative of this function, $f'(x) = 2x - 1$.

At second, we have $2x - 1 = 0$, then $x_1 = 0.5$ is a stationary (critical) point.

We have two intervals $(-\infty, 0.5)$ and $(0.5, +\infty)$.

Let us define the behavior of the function on this intervals.

Take the point $a = -1$, $a \in (-\infty, 0.5)$,
then $f'(a) = f'(-1) = 2 \cdot (-1) - 1 = -2 - 1 = -3 < 0$,
this means that $f(x)$ is decreasing on the interval $x \in (-\infty, 0.5)$.

Take the point $b = 1$, $b \in (0.5, +\infty)$,
then $f'(b) = f'(1) = 2 \cdot 1 - 1 = 2 - 1 = 1 > 0$,
this means that $f(x)$ is increasing on the interval $x \in (0.5, +\infty)$,

Thus, we have an answer:
$f(x)$ is increasing on the interval $x \in (0.5, +\infty)$,
$f(x)$ is decreasing on the interval $x \in (-\infty, 0.5)$.

The graph has this form.