

Question

Function: $f(x) = x^2 - 3x - 40$. Domain: $x \in R$.

First derivate: $f'(x) = 2x - 3$.

Second derivate: $f''(x) = 2$.

We have:

Interval	$f'(x)$	$f''(x)$
$-\infty < x < \frac{3}{2}$	-	+
$\frac{3}{2} < x < \infty$	+	+

So, the concave intervals:

Concave up: $x \in R$.

Concave down: $x \in \emptyset$.

Inflection point: there is no any inflection points.

Answer: concave up: $x \in R$; concave down: $x \in \emptyset$ (there is no concave-down intervals); inflection point:

there no any inflection points.