CHAPTER 5

section 5.1

2) $f(x)$ has an absolute maximum and local maximum value $f(1.5)$ at $x = 1.5$

$f(x)$ has no absolute (local) minimum.

12) $f(x)$ has an absolute maximum value 1 at $x = 0$ and $x = 2$

$f(x)$ has an absolute minimum value 0 at $x = 1$

20) The value of c that satisfies the conclusion of the mean value theorem is

$c = \sqrt{3}$ (since $\left(-\sqrt{3}\right) \notin (1, 3)$).

section 5.2

2) $f(x)$ is increasing on $(-3, -1)$.

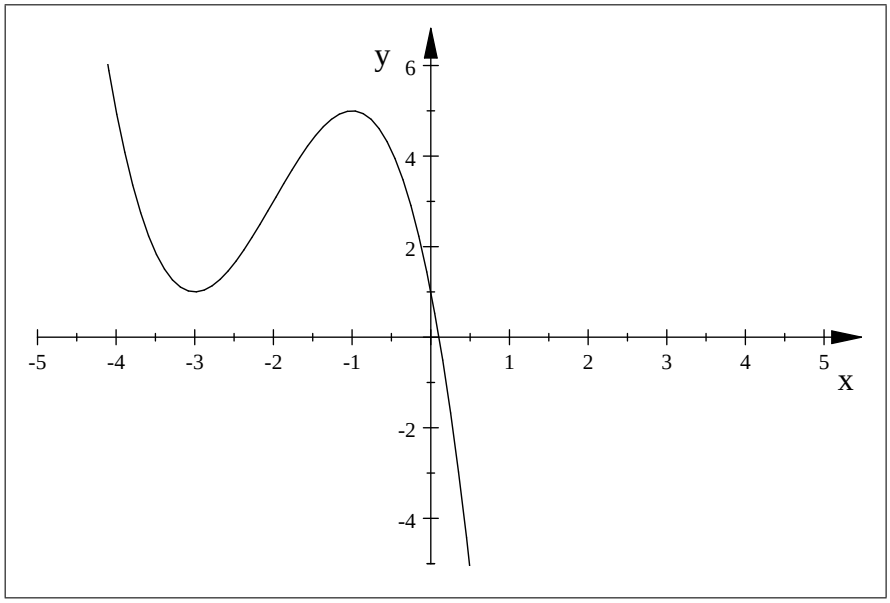
$f(x)$ is decreasing on $(-\infty, -3) \cup (-1, \infty)$

$f(x)$ has a local maximum value $f(-1) = 5$ at $x = -1$

$f(x)$ has a local minimum value $f(-3) = 1$ at $x = -3$

The graph of $f(x)$ is concave up on $(-\infty, -2)$ and concave down on $(-2.\infty)$

$f(x)$ has an inflection point $(-2, 3)$ at $x = -2$



8) $D_f = R$

$y-$intercept point is $(0, 3)$.

The function is neither even nor odd and not periodic.

The funcion has no vertical asymptote .

The funcion has no horizontal asymptote .

The critical numbers are $-1, 1$

$f(x)$ is increasing on $(-\infty, -1) \cup (1, \infty)$.

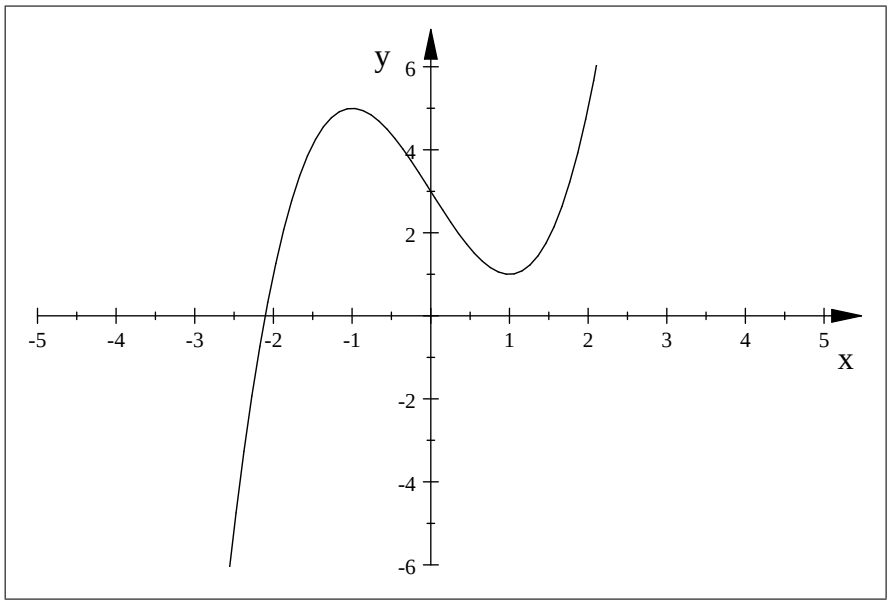
$f(x)$ is decreasing on $(-1, 1)$

$f(x)$ has a local maximum value $f(-1) = 5$ at $x = -1$

$f(x)$ has a local minimum value $f(1) = 1$ at $x = 1$

The graph of $f(x)$ is concave up on $(0, \infty)$ and concave down on $(-\infty.0)$

$f(x)$ has an inflection point $(0, 3)$ at $x = 0$



$$f(x) = x^3 - 3x + 3$$

section 5.3

2) 3

6) 0

10) 0

12) $\frac{1}{2}$

14) 1
