Maximum, minimum and turning points

y = 5x^2-10x+3

y = x^3-3x
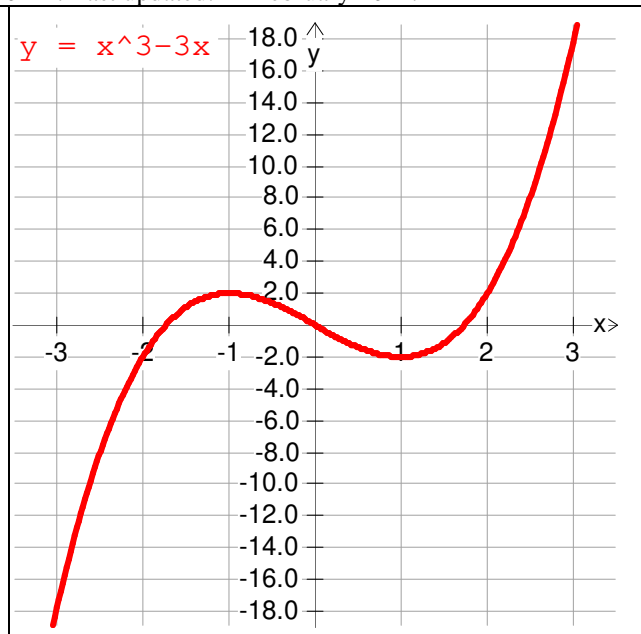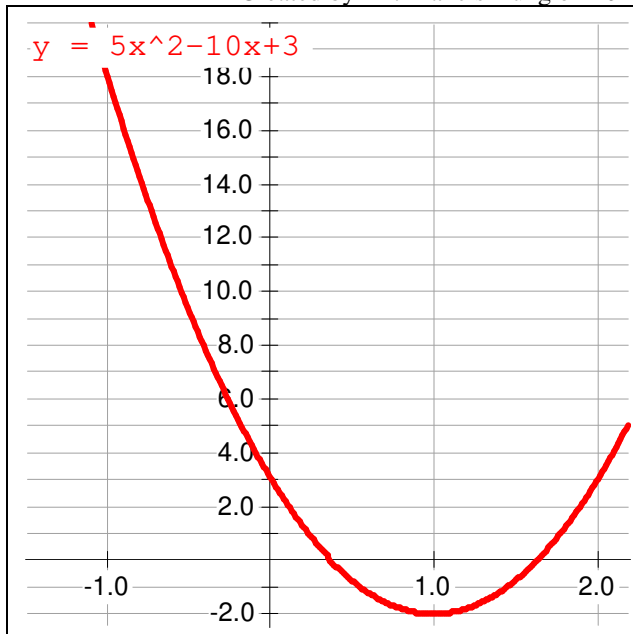
Given f(x) = $5x^2 - 10x + 3$.

For $-1 \le x \le 2$, the local minimum is _____.

The local maximum are_____.

The absolute minimum is _____.

The absolute maximum is _____.

The turning point is (,   ).
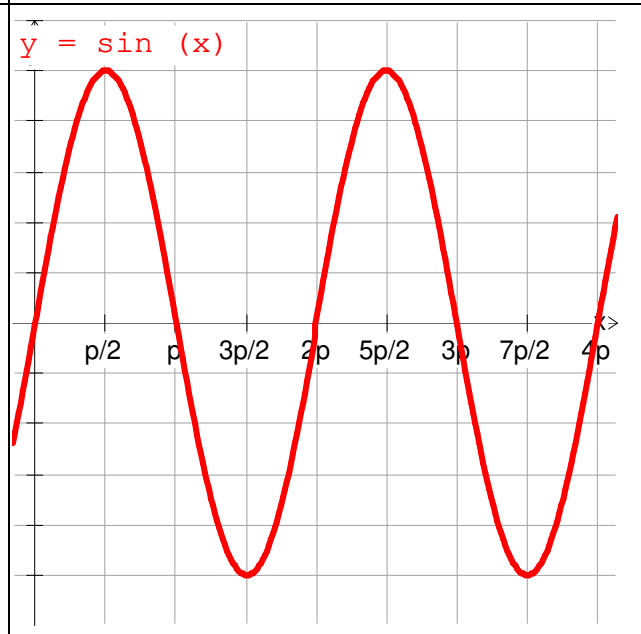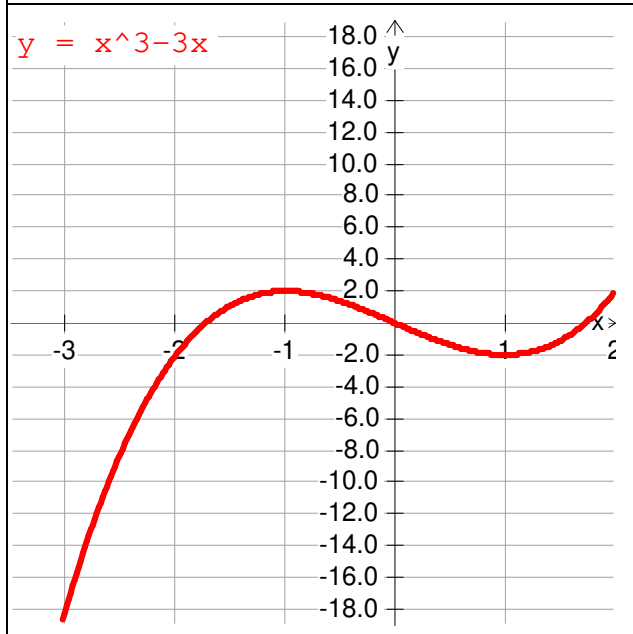
Given f(x) = $x^3 - 3x$.

For $-3 \le x \le 3$, the local minimum are_____.

The local maximum are_____.

The absolute minimum is _____.

The absolute maximum is _____.

The turning points are (,   ),(,   ).

y = x^3-3x

y = sin (x)

Given f(x) = $x^3 - 3x$.

For $-3 \le x \le \sqrt{3}$, the local minimum are_____.

The local maximum are_____.

The absolute minimum is _____.

The absolute maximum is _____.

The turning points are (,   ),(,   ).

Given f(x) = $\sin x$.

For $0 \le x \le 4\pi$, the local minimum are_____.

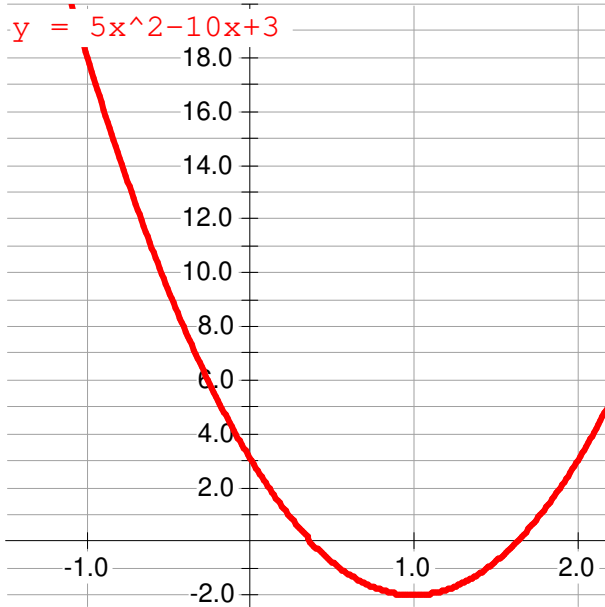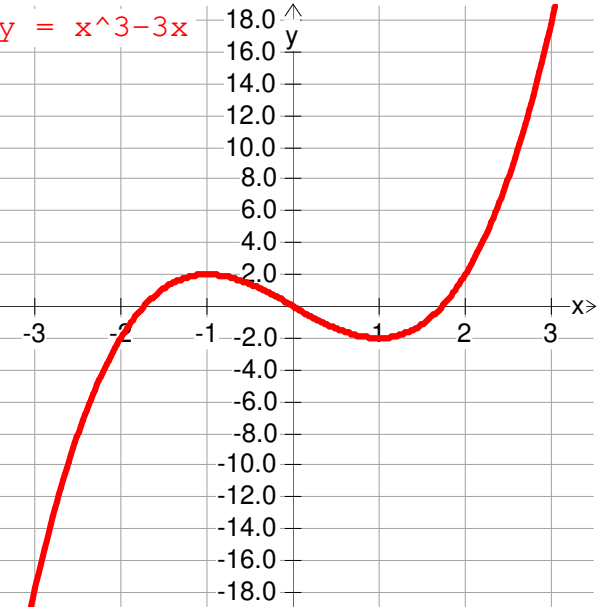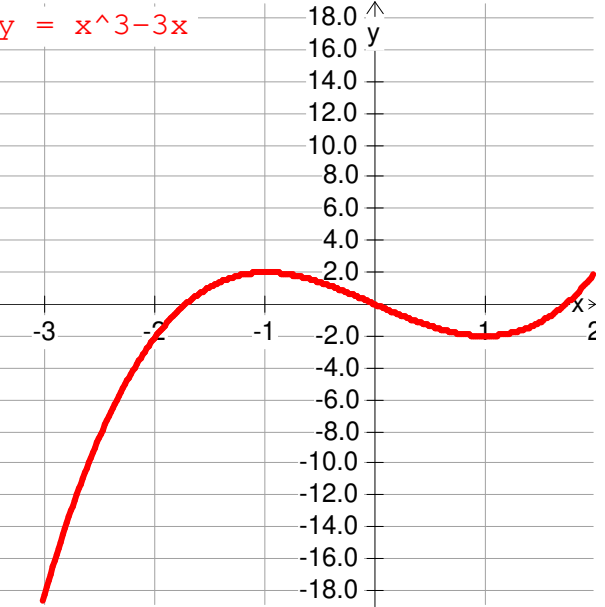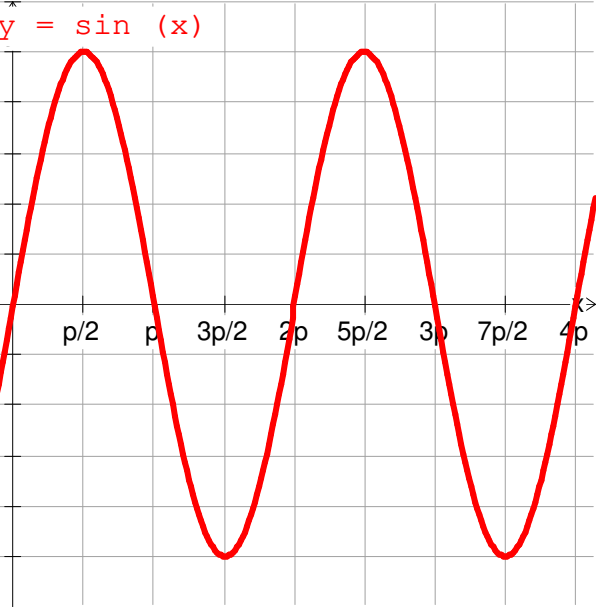The local maximum are_____.

The absolute minimum is _____.

The absolute maximum is _____.

The turning points are (,   ) , (,   ) , (,   )
or (,   ).

The absolute maximum and the absolute minimum occur either at _____ or

_____.

y = 5x^2−10x+3

y = x^3−3x

Given $f(x) = 5x^2 − 10x + 3$.

For $−1 ≤ x ≤ 2$, the local minimum is –2 .

The local maximum are   3 and 18 .

The absolute minimum is –2 .

The absolute maximum is 18 .

The turning point is (1 , –2) .

Given $f(x) = x^3 − 3x$

For $−3 ≤ x ≤ 3$, the local minimum are –18 and –2

The local maximum are 2 and 18 .

The absolute minimum is –18 .

The absolute maximum is 18 .

The turning points are (–1 , 2) and (1 , –2).

y = x^3−3x

y = sin (x)

Given $f(x) = x^3 − 3x$.

For $−3 ≤ x ≤ \sqrt{3}$, the local minimum are –18, –2 .

The local maximum are 2 and 0 .

The absolute minimum is   –18 .

The absolute maximum is 2 .

The turning points are (–1 , 2) and (1 , –2).

Given $f(x) = \sin x$.

For $0 ≤ x ≤ 4π$, the local minimum are 0 and –1 .

The local maximum are 0 and 1 .

The absolute minimum is –1 .

The absolute maximum is 1 .

The turning points are $(\frac{π}{2}, 1), (\frac{3π}{2}, −1), (\frac{5π}{2}, 1), (\frac{7π}{2}, −1)$.

The absolute maximum and the absolute minimum occur either at <u>turning points</u> or <u>boundaries (i.e. end points)</u>.