1. find all of the critical points and local maximums and minimums of each function

$$f\left(x\right)=2x^{2}-12x+7$$

1. find all critical points and local extremes of each function on the given intervals.

$f\left(x\right)=X^{2}-3x+5$ on the entire real number line.

1. find all critical points and local extremes of each function on the given intervals.

$f\left(x\right)=\frac{1}{x^{2}+1}$ on the entire real number line.

1. verify that the hypotheses of Rolle’s Theorem are satisfied for each of the functions on the given intervals, and find the value of the number(s) “c” that Rolle’s Theorem promises.

F(x) =$x^{2}$ on [-2, 2]

1. verify that the hypotheses of the Mean Value Theorem are satisfied for each of the functions on the given intervals, and find the number(s) “c” that the Mean Value Theorem guarantees.

$f\left(x\right)=sin⁡(x)$ on [0, $\frac{π}{2}]$