**Multiple choices**

|  |  |
| --- | --- |
| **1.** | Which of the following is the average rate of change of $ f\left(x\right)=\frac{x-3}{x}$ over the interval $\left[1;3\right]$ |
|  | **a.)** $-1$ | **b.)** $\frac{1}{3}$ |
|  | **c.)** $-\frac{1}{3}$ | **d.)** $1$ |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2.** | Using the below table of values for$ f\left(x\right),$ the average rate of change of$ f\left(x\right)$over the interval $\left[1;3\right]$ is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$x$$ | $$0$$ | $$1$$ | $$2$$ | $$3$$ |
| $$f\left(x\right)$$ | $$2$$ | $$4$$ | $$6$$ | $$8$$ |

 |
|  | **a.)** $2$  | **b.)** $-2$  |
|  | **c.)** $1$ | **d.)** $3$  |

|  |  |
| --- | --- |
| **3.** | Which of the following is the average rate of change of $ f\left(x\right)=x^{2}+3x-1$ over the interval $\left[0;5\right]$ |
|  | **a.)** $4$ | **b.)** $8$  |
|  | **c.)** $-8$ | **d.)** $-4$  |

**4. Complete each statement by choosing one of the four phrases:** **the absolute maximum, the absolute minimum,** **a relative maximum, a relative minimum.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **A function** $ f$ **defined and continuous on the interval** $-2\leq x\leq 5$ **has critical points only at** $ x=-1$ **and** $ x=2$ **. The function** $ f$ **has values as given in the table below.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$x$$ | $$-2$$ | $$-1$$ | $$2$$ | $$5$$ |
| $$f\left(x\right)$$ | $$1$$ | $$2$$ | $$0$$ | $$2$$ |

 |
|  | **The value** $ x=2$ **locates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ value of the function.** **The value** $ f\left(x\right)=2$ **is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ value of the function.** |

**5. Approximate the relative and absolute extrema of the function.**

|  |  |  |
| --- | --- | --- |
|  |  |  |

**ANSWERS**

**Multiple choices**

|  |  |
| --- | --- |
| **1.** | Which of the following is the average rate of change of $ f\left(x\right)=\frac{x-3}{x}$ over the interval $\left[1;3\right]$ |
|  | **a.)** $-1$ | **b.)** $\frac{1}{3}$ |
|  | **c.)** $-\frac{1}{3}$ | **d.)** $1$ |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2.** | Using the below table of values for$ f\left(x\right),$ the average rate of change of$ f\left(x\right)$over the interval $\left[1;3\right]$ is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$x$$ | $$0$$ | $$1$$ | $$2$$ | $$3$$ |
| $$f\left(x\right)$$ | $$2$$ | $$4$$ | $$6$$ | $$8$$ |

 |
|  | **a.)** $2$  | **b.)** $-2$  |
|  | **c.)** $1$ | **d.)** $3$  |

|  |  |
| --- | --- |
| **3.** | Which of the following is the average rate of change of $ f\left(x\right)=x^{2}+3x-1$ over the interval $\left[0;5\right]$ |
|  | **a.)** $4$ | **b.)** $8$  |
|  | **c.)** $-8$ | **d.)** $-4$  |

**4. Complete each statement by choosing one of the four phrases:** **the absolute maximum, the absolute minimum,** **a relative maximum, a relative minimum.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **A function** $ f$ **defined and continuous on the interval** $-2\leq x\leq 5$ **has critical points only at** $ x=-1$ **and** $ x=2$ **. The function** $ f$ **has values as given in the table below.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$x$$ | $$-2$$ | $$-1$$ | $$2$$ | $$5$$ |
| $$f\left(x\right)$$ | $$1$$ | $$2$$ | $$0$$ | $$2$$ |

 |
|  | **The value** $ x=2$ **locates the absolute minimum value of the function.** **The value** $ f\left(x\right)=2$ **is** the **absolute maximum value of the function.** |

**5. Approximate the relative and absolute extrema of the function.**

|  |  |  |
| --- | --- | --- |
|  |  | Relative minimum $\left(-3;-2\right)$Relative maximum$ \left(–0.8;4.2\right)$Absolute minimum $\left(2.5;-4.8\right)$No absolute maxima. |