**Calc Medic Ultimate Justifications Guide**

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| **To justify that…** | **State/show that…** |
| is continuous at |  |
| is differentiable at |  |
| is increasing on the interval |  |
| is decreasing on the interval |  |
| has a critical point at |  |
| has a relative minimum at |  |
| has a relative maximum at |  |
| is concave up on the interval |  |
| is concave down on the interval |  |
| has an inflection point at |  |
| has an absolute minimum at |  |
| has an absolute maximum at |  |
| for some x on the interval [a,b] |  |
| for some x on the interval |  |
| A particle is at rest at |  |
| A particle changes direction at |  |
| A particle is speeding up/slowing down at |  |
| A particle is moving away from/towards the origin at . |  |
| A tangent line approximation for is an underestimate/overestimate for the true value of |  |
| A right Riemann sum is an underapproximation/overapproximation for the area under a curve between and |  |
| A left Riemann sum is an underapproximation/overapproximation for the area under a curve between and |  |
| A trapezoidal approximation is an underapproximation/overapproximation for the area under a curve between and |  |