

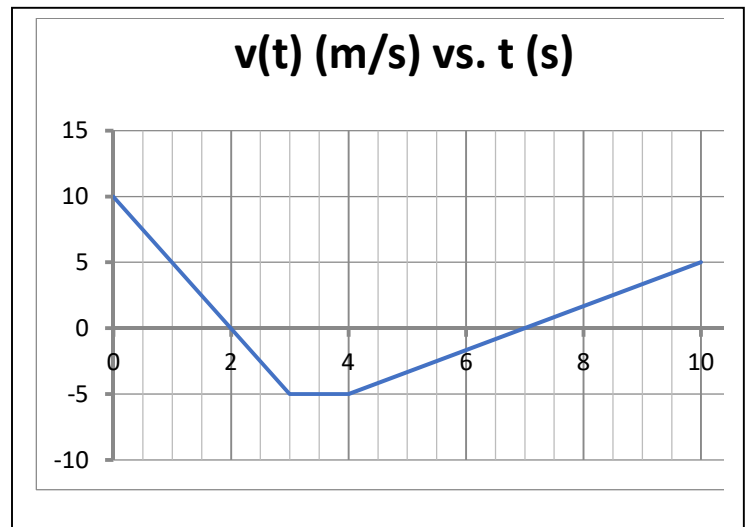
1. Find the intervals of increase and decrease algebraically for: $y = -4x^3 + 15x^2 + 18x + 3$ [3K 2A 2C]

2. Find the point(s) of inflection and intervals of concavity for: $f(x) = 3x^4 - 16x^3 + 24x^2 - 9$ [4K 2A 2C]

3. Use calculus and algebraic methods to do a complete analysis (i.e., intervals of increase and decrease, intercepts, critical points, points of inflection, and intervals of concavity) for $g(x) = (x+3)^3(x+5)$. You DO NOT need to graph.[6K 3A 3C]

4. The graph shows the velocity-time graph of an object. Determine the displacement of the object AT KEY POINTS IN TIME from 0s to 10s. You can use the methods discussed in class and assume that $s(0) = 0\text{m}$. You DO NOT need to graph the displacement-time graph

[5A 2T 3C]



5. Let $f(x) = ax^3 + bx^2 + cx + d$. Determine the values of a , b , c , and d if $f(x)$ has a point of inflection at $(0, 2)$ and a critical point at $(2, 6)$. [4A 3T 2C]