

Name: _____

Show all work and circle/box your final answer. All answers must be simplified unless stated otherwise.

1. (*0 points*) One car leaves a given point and travels north at 30 mph. Another car leaves the same point at the same time and travels west at 40 mph. At what rate is the distance between the two cars changing at the instant when the cars have traveled 2 hours?

2. (*0 points*) Use linear approximation to approximate $\sqrt[3]{29}$.

3. (*0 points*) Find the absolute extrema of $f(x) = 3x^4 - 4x^3$ on the interval $[-1, 2]$

4. (*0 points*) Find all values of c that satisfy the conclusion of the mean value theorem for the function $f(x) = x^2 - 5x + 4$ on the interval $[1, 4]$

5. (*0 points*) Show that $x^5 + 10x + 3 = 0$ has exactly one solution.