

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. An apple grower finds that if she plants 20 trees per acre, each tree will yield 90 bushels of apples. She estimates that for each additional tree per acre, the yield per tree will decrease by 3 bushels.
 - (a) Set x the number of additional trees per acre. Write an equation for the total harvest $H(x)$ of apples per acre.

- (b) How many trees per acre should be planted to maximize the harvest?

2. Find the slope of the tangent line to the graph of $x^2 + y^3 = 7xy - 9$ at the point $(2, 1)$.