

1. **(4 points)** Either demonstrate that the function $f(x) = 5 - 2x^3$ has no inverse function, or find a formula for its inverse.
2. **(3 points)** Find the quadratic function $y = f(x)$ which has vertex $(-3, 4)$ and which passes through the point $(0, 0)$.
3. **(4 points)** You are planting cherry tomatoes in a small garden; overcrowding will reduce each plant's production. If you put only 4 plants in the garden, they will each produce 80 fruits over the course of the season. Each additional plant will reduce the per-plant productivity by 5 fruits. How many cherry tomatoes should you plant to maximize your yield? Show your work.
4. **(4 points)** Determine the end behavior (a.k.a. long-term behavior), x -intercepts (a.k.a. zeroes), and y -intercepts of the function $g(x) = (-3x + 2)(x - 4)^2$.