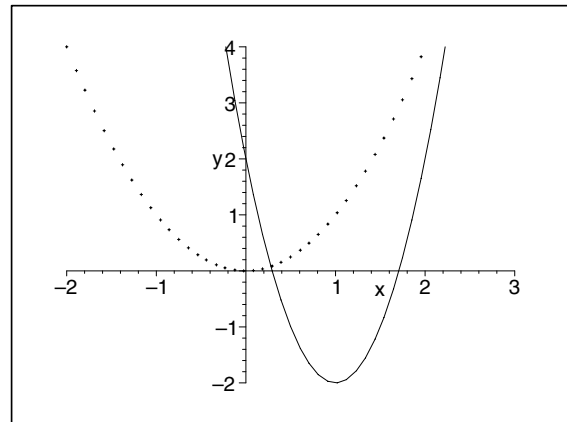
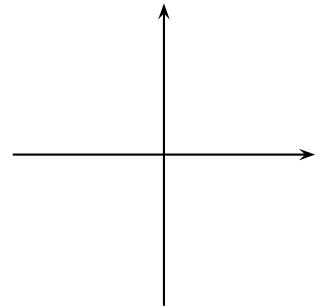


1. To the dotted graph to the right shows a graph of the function $f(x) = x^2$ and the solid curve another quadratic polynomial. Estimate the equation of the solid curve by expressing it as a magnification and translation of the dotted curve. (5 points)



2. Let $f(x) = \sqrt{2x - 1} + 2$. Find a formula for the inverse function of f and sketch the graph of f and f^{-1} together on the axes. (5 points)



3. A ball is thrown upward. While the ball is in the air, suppose its height (in feet) at time t (in seconds) is given by $h(t) = -16t^2 + 50t + 5$. Determine approximately how high the ball will travel and how long it will be in the air. Express your answers correct to one decimal place. (5 points)

4. Let $f(x) = x^4 + 3x^3 + x^2 + x - 1$. What does Descartes's Rule of Signs allow you to conclude about the number of positive and negative real roots? Use the Rational Root Theorem to determine if $f(x)$ has any rational zeros. Approximate the real roots to one decimal place. (5 points)