1. Find the minimum point on the graph.
   \[ y = 2x^2 + 8x + 9 \]
   **Answers**
   
   \[-2, 1\]

2. Find the quadratic that has a minimum at \((-1, 2)\) and passes through the point \((0, 1)\).
   **Answers**
   
   \[ f(x) = -(x + 1)^2 + 2 \]

3. If \( P = 0.0002x^2 + 140x - 250,000 \) where \( x \) is the number of units produced, what production will yield a maximum profit?
   **Answers**
   
   \( 350,000 \)

4. Find all real zeros of the polynomial.
   \[ g(t) = t^3 + 3t^2 - 16t - 48 \]
   **Answers**
   
   \( \pm 4, 3 \)

5. Find a 3rd polynomial function with zeros 0, 1, -2.
   **Answers**
   
   \[ f(x) = x^2(x-1)(x+2) \]

6. Use the intermediate Value Theorem to estimate the real zero in the interval \([0, 1]\)
   \[ f(x) = 2x^3 + 7x^2 - 1 \]
   **Answers**
   
   \( (.36, 0) \)

7. Which of the following is an upper bound for the zeros of \( f? 1, 2 \) or 3
   \[ f(x) = x^5 + 2x^4 - x^3 - 2x^2 - 30x - 60 \]
   **Answers**
   
   \( 3 \)

8. Find all real zeros: \( x^3 + 8x^2 + 17x + 6 = 0 \)
   **Answers**
   
   \(-3, \frac{-5 \pm \sqrt{17}}{2}\)

9. Find a polynomial with real coefficients that has zeros: 1, -1, i, -i
   **Answers**
   
   \[ x^4 - 1 \]
10. Given \( f(x) = x^4 - 16 \)
   a. Write as a product of factors irreducible over rationals.
   b. Write in completely factored form.

11. Find the vertical asymptote(s) for \( \frac{x+5}{x^2 + 4} \)

12. Find the vertical asymptote for
   \[ f(x) = x + 2 - \frac{3}{x} \]

13. Find horizontal asymptote for \( f(x) = \frac{7}{x - 4} \)

14. Find the slant asymptote for:
   \[ f(x) = \frac{x^2 + 3x + 1}{x + 1} \]