MAC1147   Name: _____

UFID: _____

1. Find a polynomial function that has zeros in $x = -1$, $x = \sqrt{2}$, $x = 3$ and $x = 4$.

2. Use long division algorithm to simplify below expression.

$$\frac{x^4 + 9x^3 - 5x^2 - 36x + 4}{x^2 - 4} \tag{1}$$

3. Use quadratic formula to find the complex roots of the equation $x^2 + 6x + 10 = 0$.

4. Write the quotient in standard form.

$$\frac{1-2i}{1+2i} \tag{2}$$

5. If $1 - \sqrt{3}i$ is the root of $h(x) = 3x^3 - 4x^2 + 8x + 8$, find all other real roots.
Hint: Use the fact that if a polynomial with a complex root has only real coefficients, then the complex conjugate of that root is also a root of that polynomial.