

MTH 30, Sec. 2996S. QUIZ 5. NAME: _____

[4] **1.** Write down a polynomial of degree 4 whose roots are

a) $-1, 2, 3$ and 1 .

b) $\sqrt{3}, \sqrt{4}, i$ and $-i$.

[8] **2.** Divide using long division. Write the answer as $D = d \cdot q + r$.

a) $\frac{x^3 - 4x^2 + x + 2}{x^2 - 5x + 2}$

b) $\frac{x^4 - x^2 + 1}{x^2 + 1}$

- [10] **3.** Factor the polynomial $x^4 - 5x^3 + 5x^2 + 5x - 6$ by first finding the candidates for rational roots and then using synthetic division to find out which of the candidates are actual roots.