ALGEBRA
Midterm Test.

Name:_____

Student Number:_____

Version of the test:_____

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1. (2p.) Using the Carthesian form of complex numbers, compute

$$\sqrt{2-3i}.$$

2. (1p.) Give a complex polynomial of degree 3 with integer coefficients such that $z_1 = \frac{1}{2}$, $z_2 = -1 + \sqrt{3}i$ are two of its roots.

3. (2p.) Decompose $\frac{x^2+x+1}{(x^2-4)(x+1)}$ into a sum of real partial fractions.

4. (1p.) Find the inverse matrix

$$\begin{pmatrix} 1 & -1 \\ 2 & -3 \end{pmatrix}^{-1}$$

5. (2p.) Solve the system of linear equations

$$\begin{cases} x - 2y + 3z = 1 \\ 2x - y + z = 2 \end{cases}.$$
