ALGEBRA
Midterm Test.

Name:_____

Student Number:_____

Version of the test:_____

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

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

2. (1p.) Give a complex polynomial of degree 3 with integer coefficients such that $z_1 = \frac{1}{5}$, $z_2 = \sqrt{2}i - 1$ are two of its roots.

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

4. (1p.) Find the inverse matrix

$$\begin{pmatrix} 3 & 5 \\ 2 & 4 \end{pmatrix}^{-1}$$

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

$$\begin{cases} 3x - 2y + 5z = 1 \\ 4x + 3y + 2z = -1 \end{cases}.$$
