

ALGEBRA

Midterm Test.

Name: _____

Student Number: _____

Version of the test: _____

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

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

2. (1p.) Give a complex polynomial of degree 3 with integer coefficients such that $z_1 = \frac{1}{4}$, $z_2 = \sqrt{3}i - 2$ are two of its roots.

3. (2p.) Decompose $\frac{x^2+3x}{(x^2-4)(x+5)}$ into a sum of real partial fractions.

4. (1p.) Find the inverse matrix

$$\begin{pmatrix} 2 & 5 \\ 2 & 6 \end{pmatrix}^{-1}$$

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

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