Term Test Ab version 1

(1) [5 points] Determine how many solutions the following system of equations has. Your answer should be none, one, or infinitely many. Show your work.

$$\begin{array}{rcrcrcr} 4a & - & 2b & + & 3c & = & 2 \\ 5a & + & b & - & 2c & = & 3 \\ -7a & - & 7b & + & 12c & = & -5 \end{array}$$

(2) [5 points] Find the three cube roots of $-2028 + 845i$ in polar form. Clearly indicate the radius and the angle (in degrees) of your solutions.

(3) [5 points] The following points lie on a parabola $y = ax^2 + bx + c$: $P = (3, 28), Q = (-1, 12), R = (2, 15)$. Determine the coefficients of the parabola.

(4) [5 points] Determine how many solutions the following system of equations has. Your answer should be none, one, or infinitely many. Show your work.

$$\begin{array}{rcrcrcr} -4x & + & 2y & + & 6z & = & 4 \\ 8x & - & 8y & - & z & = & 2 \\ -4x & - & 2y & + & 17z & = & 9 \end{array}$$

(5) [5 points] Convert the following complex number to polar form:

$$\frac{-2 + 2i}{5 + i}$$