Term Test Ab version 2

(1) [5 points] The following points lie on a parabola $y = ax^2 + bx + c$: $P = (1, 4), Q = (-3, 40), R = (-2, 16)$. Determine the coefficients of the parabola.

(2) [5 points] Find the three cube roots of $10i + 5$ in polar form. Clearly indicate the radius and the angle (in degrees) of your solutions.

(3) [5 points] Convert the following complex number to polar form:

$$\frac{3 - 3i}{-4 + i}$$

(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.

$$\begin{array}{rcrcrcr} 3x & + & 4y & - & 8z & = & -6 \\ -x & + & 3y & + & 6z & = & 7 \\ x & + & 10y & + & 4z & = & -3 \end{array}$$

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

$$\begin{array}{rcrcrcr} 2a & + & 3b & + & 7c & = & -1 \\ 4a & - & 2b & - & 2c & = & 3 \\ 8a & - & 12b & - & 20c & = & 11 \end{array}$$