Math 3280 Worksheet 12: Determinants, and curve-fitting with matrices

Group members (2 to 4): _____

(1) Compute the determinant of the matrix A shown below by first creating more zero entries using row operations (add multiples of a row to another row).

$$A = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 0 & 2 & -1 & 2 \\ 1 & 2 & 2 & 5 \\ 0 & 2 & 0 & 6 \end{pmatrix}$$

(2) Using the equation
$$Ax + By + C = x^2 + y^2,$$
find a circle passing through the points $(1, 7)$, $(-1, 3)$, and $(0, 0)$. After finding A, B, and C, put the circle's equation in the standard form
$$(x - c_x)^2 + (y - c_y)^2 = r^2.$$
(complete the squares.)