Assignment 9

[2pt] 1. Use polar form to calculate $(2 - 2i)^6$.

[3pt] 2. Use polar form to find all the fifth roots of -32 in the complex numbers. (That is, find $(-32)^{1/5}$.)

[5pt] 3. Solve the following system of linear equations: (Hint: It has a unique solution.)

$$
\begin{aligned}
z_1 + (1 + i)z_2 + 2iz_3 &= -1 - 3i \\
2iz_1 + (-1 + 3i)z_2 - (2 + 2i)z_3 &= 4 - 2i \\
(1 - i)z_1 + (-1 + 6i)z_3 &= -5 - i
\end{aligned}
$$