Preliminary problems. These should be submitted to Gradescope before Thursday discussion.
(P1) Find the additive order of each integer $a$ modulo 15 , as well as their multiplicative orders (where applicable). Identify which elements are primitive roots.

| $a$ | add. order | mult. order |
| :---: | :---: | :---: |
| 0 |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |
| 11 |  |  |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |

