

Old rules apply. All students benefit by trying all problems. You can use any mathematically valid technique to solve any problem.

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1. (ungraded) – §2.1 – 28, 29.
2. (ungraded) – §2.2 – 5 abcd
3. (ungraded) – §2.2 – 6
4. (graded) – §2.1 – 20.
5. (graded) – §2.1 – 23.
6. (graded) – §2.2 – 8 ( $\alpha \in \mathbf{N}$ ).
7. (graded) – §2.2 – 9.
8. (graded) – ( $\mathcal{E}$ ) Solve the linear congruence  $11x \equiv 17 \pmod{54}$ .
9. (graded) – ( $\mathcal{E}$ ) Prove that  $453^{373}$  and  $453^{453}$  have the same last two decimal digits. (Hint: you are not asked to *compute* these last two digits!)
10. (graded) – ( $\mathcal{E}$ ) Determine all integers  $n$  with the property that the last three digits of  $56n$ , when written in the usual decimal notation, are “144”.
11. (bonus) – §2.1 – 25.
12. (bonus) – §2.1 – 27.
13. (bonus) – §2.1 – 49.