

1. – §7.2 – 1a, b, c (ungraded).
2. – §7.2 – 7 (ungraded).
3. – §7.3 – 3a, b (ungraded).
4. – §7.1 – 2a, b, c, d.
5. – §7.2 – 2a, b, c (but compute $\tau(n)$ as well as $\sigma(n)$.)
6. – §7.3 – 4a, b.
7. – §7.3 – 14. (This is a harder one. Estimate $\sigma(n)/n$ from above using the geometric series.)
8. – (E) Compute $\text{ord}_{1085}(2)$. Note that $1085 = 5 \cdot 7 \cdot 31$.
9. – (E) Make a table of $(\tau(n), \sigma(n), \sigma(\sigma(n)))$ for $2 \leq n \leq 10$. Use this table to show that $\sigma(\sigma(n))$ is *not* a multiplicative function.
10. – (E) Suppose n is an integer and $\nu_3(n) = r$. Determine the values of

$$\frac{\phi(3n)}{\phi(n)} \quad \text{and} \quad \frac{\sigma(3n)}{\sigma(n)}.$$

as a function of r . Be sure to distinguish the cases $r = 0$ and $r > 0$.