1. 18.4

2. 18.6 (Compare with continuity from above)

3. 18.9

4. 18.11

5. 18.17

6. 18.26

7. 18.36

8. 18.39

9. 18.40

10. Suppose $f : [a, b] \to [-M, M]$. Show that f is measurable if and only if

$$\sup\left\{\int_a^b \phi : \phi \text{ is simple and } \phi \leq f\right\} = \inf\left\{\int_a^b \psi : \psi \text{ is simple and } \psi \geq f\right\}.$$

Conclude that every Riemann integrable function is Lebesgue integrable and that its Riemann and Lebesgue integrals agree.