Section 2.5 Assigned problems: 1-7, 9, 12.

1. (a) $20\left(1-e^{-\frac{3}{5}}\right) \approx 9.0238$ lb (b) $(100\ln 4)/3 \approx 46.21$ minutes (c) 20 lb

2. (a) $100\,e^{-\frac{2}{5}} \approx 67.032$ lb (b) $25\ln 5 \approx 40.236$ minutes (c) 0 lb

4. The water should be poured into the tank at the rate $(25\ln 5)/3 \approx 13.412$ gal/min or higher.

5. 21 lb

6. $\frac{5}{8}$ lb

7. (a) $\frac{4651}{216} \approx 21.532$ lb (b) $15\big(2-\sqrt{2}\big) \approx 8.7868$ minutes (Note: It is interesting to note here that (b) can be solved without solving (a) first. This is the consequence of the fact that the differential equation in (b) is separable and linear. In fact this is true for any separable linear equation.)

9. (b) $\frac{25}{13}\ln\left(\frac{25}{12}\right) \approx 1.4115$ years

12. $52-24\,e^{-1} \approx 43.171$ lb