

## ANSWERS TO SELECTED PROBLEMS

### *Fundamentals of Engineering Thermodynamics* 8<sup>th</sup> Edition by Moran, Shapiro, Boettner, and Bailey, 2014

#### Chapter 3

- |       |  |       |                             |
|-------|--|-------|-----------------------------|
| 3.5   | (a) two-phase liquid-vapor mixture, (b) sub-cooled liquid, (c) superheated vapor | 3.107 | 63.51, 63.12                |
| 3.7   | (b) 260, (c) 0.15567   | 3.110 | +7.4%                       |
| 3.9   | at 1.00: 333.58  | 3.113 | 0.5, 4.55                   |
| 3.12  | (a) 133.6, (b) 24.931, (c) 0.06109   | 3.115 | (a) 200.5                   |
| 3.15  | (a) 0.149, (b) 3.533   | 3.118 | 4.16, 14.56                 |
| 3.18  | (a) 0.7, (b) 0.11  | 3.120 | 0.193, -9.16                |
| 3.21  | 149, (b) 104.35  | 3.124 | 1857                        |
| 3.24  | 99.67, 29.3  | 3.126 | 0.2                         |
| 3.27  | 54.99  | 3.129 | (a) 6.97, (b) 300, (c) 0.12 |
| 3.30  | 15.29  | 3.132 | (a) 300, (b) -1.1           |
| 3.35  | -27.75   | 3.136 | 840.8                       |
| 3.38  | (a) -14.66, 153.67, (b) 5, 2855.4, (c) 44.46, 0.2971                             | 3.139 | 70.65, 531.6                |
| 3.41  | (a) 2772.15, (b) 849.9, (c) 601.68   | 3.144 | (b) 8%                      |
| 3.43  | (a) 133.6, 2196.7  | 3.146 | (a) 12.1%                   |
| 3.46  | 407.6  |       |                             |
| 3.49  | -485.5   |       |                             |
| 3.54  | (a) 50, (b) 72.91  |       |                             |
| 3.58  | (a) 0.2  |       |                             |
| 3.62  | (a) 0.83, (b) 1.75   |       |                             |
| 3.66  | 143.9, 3.193, 90.66%   |       |                             |
| 3.69  | 5.21   |       |                             |
| 3.73  | Process 1-2: 214.44, Process 2-3: -80.7  |       |                             |
| 3.76  | Process 1-2: -17.71, -88.19, Process 2-3: 0, -230.53                             |       |                             |
| 3.79  | Process 1-2: 82.34, 710.44, Process 2-3: 0, -759.03                              |       |                             |
| 3.81  | -371, -69.1  |       |                             |
| 3.85  | 12.75, 491.01  |       |                             |
| 3.88  | 295.9  |       |                             |
| 3.91  | 46.6   |       |                             |
| 3.94  | 8.6  |       |                             |
| 3.96  | 60.9   |       |                             |
| 3.101 | (a) 11.31, (b) 11.54   |       |                             |
| 3.104 | (a) 0.14499, (b) 0.14665, (c) 0.15769  |       |                             |