1. Algorithm 4.4 with $n = m = 4$ gives:
   (a) 0.3115733
   (b) 0.2552526
   (c) 16.50864
   (d) 1.476684

2. Algorithm 4.4 gives:
   (a) 0.3115733 with $n = m = 2$
   (b) 0.2552526 with $n = m = 4$
   (c) 16.50864 with $n = m = 4$
   (d) No result since it requires $n, m > 800$.

3. Algorithm 4.4 with $n = 4$ and $m = 8$, $n = 8$ and $m = 4$, and $n = m = 6$ gives:
   (a) 0.5119875, 0.5118533, 0.5118722
   (b) 1.718857, 1.718220, 1.718385
   (c) 1.001953, 1.000122, 1.000386
   (d) 0.7838542, 0.7833659, 0.7834362
   (e) $-1.985611, -1.999182, -1.997353$
   (f) 2.004596, 2.000879, 2.000980
   (g) 0.3084277, 0.3084562, 0.3084323
   (h) $-22.61612, -19.85408, -20.14117$

4. Algorithm 4.4 gives:
   (a) 0.51184555 with $n = m = 14$
   (b) 1.7182827 with $n = m = 20$
   (c) 1.00000081 with $n = m = 28$
   (d) 0.78333417 with $n = m = 20$
   (e) $-1.99999913$ with $n = m = 44$
   (f) 2.00000092 with $n = m = 34$
   (g) 0.30842563 with $n = m = 12$
   (h) $-19.73920977$ with $n = m = 144$

5. Algorithm 4.5 with $n = m = 2$ gives:
   (a) 0.3115733
   (b) 0.2552446
   (c) 16.50863
   (d) 1.488875

6. Algorithm 4.5 gives:

   (a) 0.3115733 with $n = m = 2$ and 4 function evaluations
   (b) 0.2552519 with $n = m = 3$ and 9 function evaluations
   (c) 16.508640 with $n = m = 3$ and 9 function evaluations
   (d) no result, since it requires $n, m > 5$

7. Algorithm 4.5 with $n = m = 3$, $n = 3$ and $m = 4$, $n = 4$ and $m = 3$, and $n = m = 4$ gives:

   (a) 0.5118655, 0.5118445, 0.5118655, 0.5118445, $2.1 \times 10^{-5}$, $1.3 \times 10^{-7}$, $2.1 \times 10^{-5}$, $1.3 \times 10^{-7}$
   (b) 1.718163, 1.718302, 1.718139, 1.718277, $1.2 \times 10^{-4}$, $2.0 \times 10^{-5}$, $1.4 \times 10^{-4}$, $4.8 \times 10^{-6}$
   (c) 1.000000, 1.000000, 1.0000000, 1.000000, 0, 0, 0, 0
   (d) 0.7833333, 0.7833333, 0.7833333, 0.7833333, 0, 0, 0, 0
   (e) $-1.991878$, $-2.000124$, $-1.991878$, $-2.000124$, $8.1 \times 10^{-3}$, $1.2 \times 10^{-4}$, $8.1 \times 10^{-3}$, $1.2 \times 10^{-4}$
   (f) 2.001494, 2.000080, 2.001388, 1.999984, $1.5 \times 10^{-3}$, $8 \times 10^{-5}$, $1.4 \times 10^{-3}$, $1.6 \times 10^{-5}$
   (g) 0.3084151, 0.3084145, 0.3084246, 0.3084245, $10^{-5}$, $5.5 \times 10^{-7}$, $1.1 \times 10^{-5}$, $6.4 \times 10^{-7}$
   (h) $-12.74790$, $-21.21539$, $-11.83624$, $-20.30373$, 7.0, 1.5, 7.9, 0.564

8. Algorithm 4.5 with $n = m = 5$ gives:

   (a) 0.51184464, error $3 \times 10^{-10}$
   (b) 1.7182816, error $2.2 \times 10^{-7}$
   (c) 1.0000000, error 0
   (d) 0.78333333, error 0
   (e) $-1.9999989$, error $1.1 \times 10^{-6}$
   (f) 2.0000001, error $1.1 \times 10^{-7}$
   (g) 0.30842509, error $4.3 \times 10^{-8}$
   (h) $-19.712428$, error 0.0268

9. Algorithm 4.4 with $n = m = 14$ gives 0.1479103, and Algorithm 4.5 with $n = m = 4$ gives 0.1506823.

10. $\iint_R \sqrt{xy + y^2}\, dA \approx 13.15229$

11. The approximation to the center of mass is $(\overline{x}, \overline{y})$, where $\overline{x} = 0.3806333$ and $\overline{y} = 0.3822558$.

12. The approximation from Algorithm 4.5 with $n = m = 5$ is $\overline{x} = 0.3820547$ and $\overline{y} = 0.3813976$.

13. The area is approximately 1.0402528.

14. The area approximation from Algorithm 4.5 is 1.0402523.

15. Algorithm 4.6 with $n = m = p = 2$ gives the first listed value. The second is the exact result.

    (a) 5.204036, $e(e^{0.5} - 1)(e - 1)^2$
    (b) 0.08429784, $\frac{1}{12}$
    (c) 0.08641975, $\frac{1}{14}$
    (d) 0.09722222, $\frac{1}{12}$
    (e) 7.103932, $2 + \frac{1}{2}\pi^2$
    (f) 1.428074, $\frac{1}{2}(e^2 + 1) - e$

16. Gaussian quadrature with $n = m = p = 3$ gives:

    (a) 5.206442
    (b) 0.08333333
    (c) 0.07166667
    (d) 0.08333333
    (e) 6.928161
    (f) 1.474577

17. Algorithm 4.6 with $n = m = p = 4$ gives the first listed value. The second is from Algorithm 4.6 with $n = m = p = 5$.

    (a) 5.206447, 5.206447
    (b) 0.08333333,0.08333333
    (c) 0.07142857,0.07142857
    (d) 0.08333333,0.08333333
    (e) 6.934912,6.934801
    (f) 1.476207, 1.476246

18. Gaussian quadrature with $n = m = p = 4$ gives 3.0521250. The exact result is 3.0521249.

19. The approximation 20.41887 requires 125 functional evaluations.