Math 4362 Homework #3

1. 2.2.17

2. [Modification of Olver 2.2.19]

   (a) Find and graph the characteristic curves for the PDE $u_t + (\sin x)u_x = 0$.

   (b) Find a formula for the solution with initial data $u(0, x) = \left|\cos(\frac{x}{2})\right|$.

   (c) Graph the solution at times $t = 0, 1, 2, 3, 5, 10$.

   (d) Calculate $u_\infty(x) = \lim\limits_{t \to +\infty} u(t, x)$.

3. 2.2.23

4. 2.2.26

5. 2.2.27

6. 2.2.31

Additional Recommended Problems [Not to turn in]

1. 2.2.21

2. 2.2.22

3. 2.2.24

4. 2.2.25

5. 2.2.28

6. 2.2.29