1. Work the following problems from the text:
   
   (a) Section 10.4: 42, 49, 53
   (b) Section 10.5: 29, 34, 40, 42
   (c) Section 10.6: 31, 32, 34

2. Consider a room ten units long in the $x$, $y$, and $z$ directions. Specifically, the walls of the room are the four planes $x = 0$, $x = 10$, $y = 0$, and $y = 10$. The floor and the ceiling are given by $z = 0$ and $z = 10$, respectively. A flat triangular mirror is mounted in one of the corners of the ceiling. The corners of the mirror are at locations $(10, 9, 10)$, $(10, 10, 9)$, and $(9, 10, 10)$. You are sitting at the location $(5, 0, 0)$ playing with your new green laser pointer. If you aim the laser pointer directly at the corner of the room with coordinates $(10, 10, 10)$, determine the coordinates where the reflected beam will hit the walls, or floor, of the room. (Hint: an incoming ray of light, and the surface normal where the ray hits the surface, form a plane. The reflected ray is in the same plane. Also, the angle between the incoming ray and the normal is the same as the angle between the normal and the reflected ray.)