1. [12.2.54] Vectors are drawn from the center of a regular \( n \)-sided polygon in the plane to the vertices of the polygon. Show that the sum of the vectors is zero. (Hint: What happens to the sum if you rotate the polygon about its center?)
2. [12.3.40] Find an equation for the line through \(P(1,3)\) parallel to \(v = 3i - 2j\). Then sketch the line. Include \(v\) in your sketch as a vector starting at the origin. (Hint: The vector \(v = ai + bj\) is parallel to the line \(bx - ay = c\).)
3. [12.5.74] **Hidden lines in computer graphics** Your eye is at (4, 0, 0). You are looking at a triangular plate whose vertices are at (1, 0, 1), (1, 1, 0), and (−2, 2, 2). The line segment from (1, 0, 0) to (0, 2, 2) passes through the plate. What portion of the line segment is hidden from your view by the plate? (This is an exercise in finding intersections of lines and planes.)
4. [13.2.24] **Beaming electrons** An electron in a TV tube is beamed horizontally at a speed of $5 \times 10^6$ m/sec toward the face of the tube 40 cm away. About how far will the electron drop before it hits?
5. [14.1.67] Find and sketch the domain of

\[ f(x, y) = \int_x^y \frac{d\theta}{\sqrt{1 - \theta^2}}. \]

Then find an equation for the level curve or surface of the function passing through the point \((0, 1)\).