## Project 3: Modeling the Cones

It's probably easiest to model one (call it standard) cone (with apex at the origin and axis running along the z-axis), store it in a display list and then just call the display list for each site, putting the right translation matrix into the modelview matrix before.

To model the standard cone, use a triangle fan (see man glBegin). The first vertex is the apex, (0,0,0). The other vertices  $(p_i$  shown below) could be regularly distributed samples on the circle that can be obtained by cutting the cone with a plane perpendicular to its axis (say, z=1) have coordinates  $(\cos(2\pi k/n),\sin(2\pi k/n),1)$ , where  $k=0,1,2,\ldots n$ . It's easiest to put those points at infinity to cause OpenGL to draw unbounded cones. To do that, use glVertex4\* rather than glVertex3\* and specify zero homogenous (fourth) coordinate. In general, a vertex (x,y,z,0) will define a vertex at infinity in the direction of (x,y,z). Also, remember to close the fan: repeat the first vertex on the circle as the last vertex.

