Figure 2.1 Eratosthenes's measurement of the circumference of the Earth, based on a theorem of Euclid. In the top image, the Sun is shown as a small gray ball far away from the Earth (large ball). The Sun's rays are assumed parallel to each other as they strike the Earth's surface. The bottom image shows the detail of the configuration of obelisk (gnomon) and shadow in relation to the surface of the Earth.
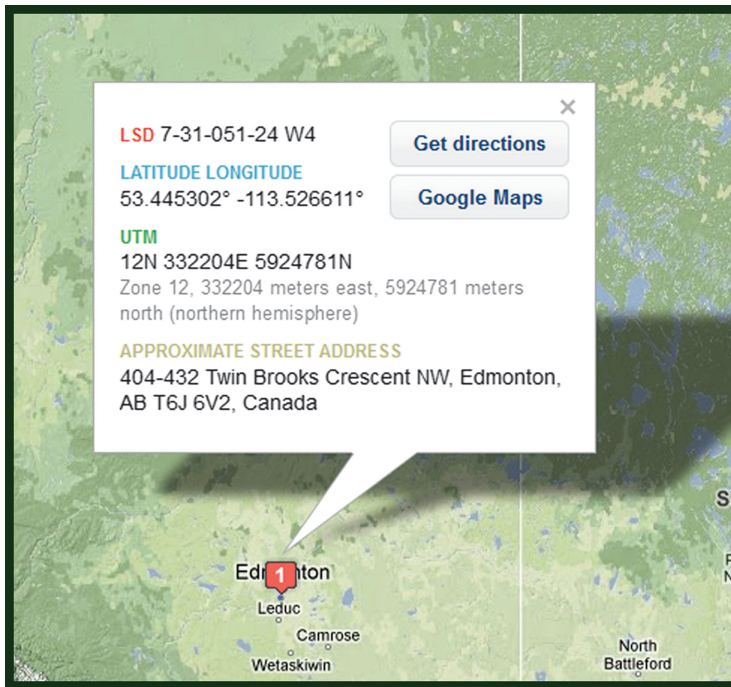
002x001.eps

Figure 2.2 Edmonton, Alberta, Canada. Description using different coordinate systems. Source: BaseLoc (www.baseloc.com), division of GPS Police (www.gpspolice.com), Calgary, AB.
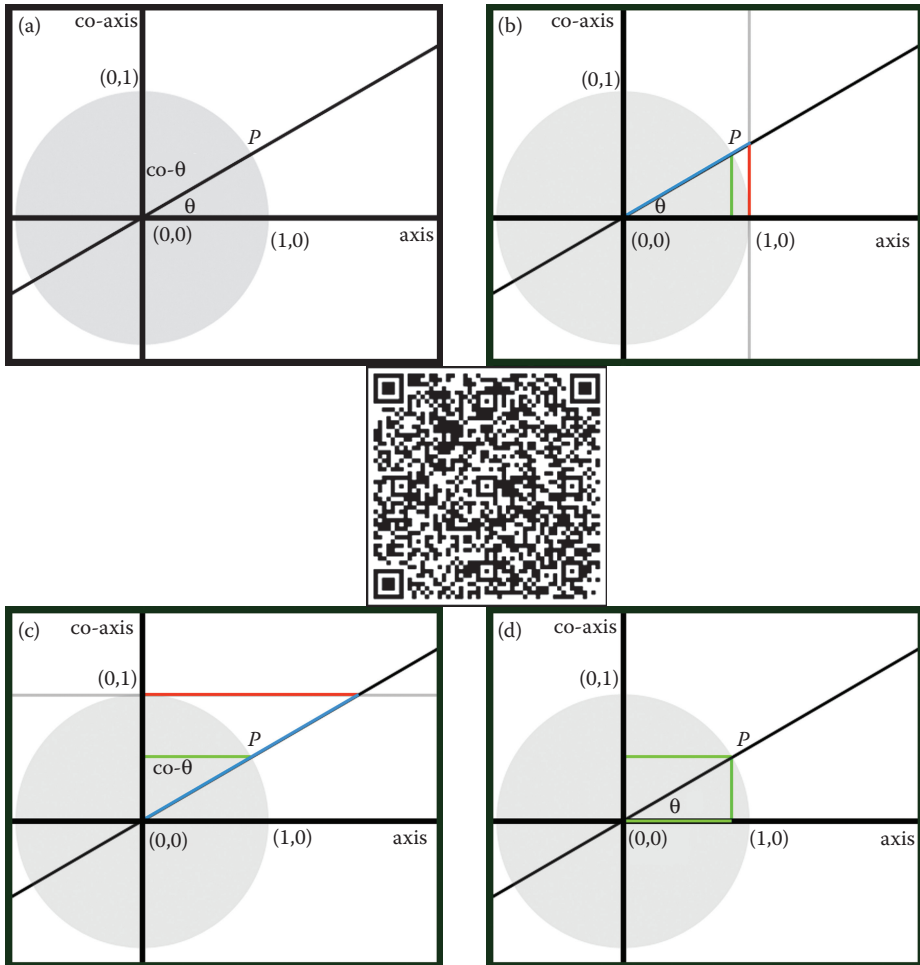
Figure 2.3 (a) Unit circle, axis, and complementary (orthogonal) axis designated as co-axis. A secant line intersects the circle at P and forms an angle of θ with the axis and an angle of co-θ with the co-axis. (b) Derivations of sine (green), tangent (red), and secant (blue) functions of angle θ. (c) Derivations of co-sine (green), co-tangent (red), and co-secant (blue) functions of co-angle θ. (d) Shows right triangle interpretation of cosine as adjacent side over hypotenuse. Source: Modified from Arlinghaus, S. L. and W. C. Arlinghaus, 2005. _Spatial Synthesis: Centrality and Hierarchy._ Volume I, Book 1. http://www. imagenet.org, Introduction. QR code links to animation from that book, http://www-personal.umich. edu/~copyrght/image/books/Spatial%20Synthesis/trig/anisandytrig.gif
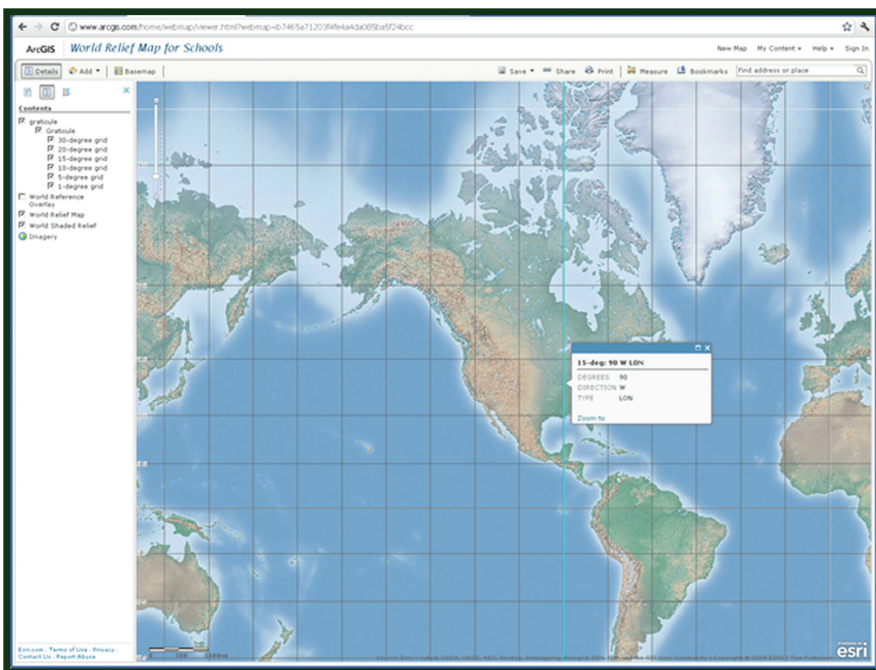
Figure 2.4 Map in ArcGIS Online showing uneven spacing between lines of latitude, but even spacing between lines of longitude, on this modified Mercator projection. Source of base maps: Esri software.