Test Yourself

By Richard L. Elgin, PhD, LS, PE

Dr. Richard Elgin is President of Elgin Surveying & Engineering in Rolla, Missouri. He serves as Adjunct Professor of Surveying at the University of Missouri-Rolla (UMR), and is a principal in the firm of Elgin, Knowles & Senne, Inc.

Trigonometric Leveling

With a total station instrument, a zenith angle of 93°10'27" is measured to a target whose vertical distance above Point X is 4.92 feet. The slope distance from the instrument to the target is 3162.48 feet. The elevation of Point X is 326.98 feet. With the instrument at the same location, a vertical angle (elevation angle) of 6°37'37" is measured to a target set at 5.96 feet vertically above Point Q. The slope distance from the instrument to this target is 4721.68 feet. Ignoring the effects of curvature and refraction, compute the elevation of Point Q. Now compute the elevation, taking into account curvature and refraction. Use the relationship, $c \& r = 0.574K^2$.

For the solution to this problem (and much more), please visit our website at: *www.TheAmericanSurveyor.com*. Good luck!

Please note that in an actual exam a sketch or diagram is not provided.