After allowing for typographical errors and missing explanations, Bowditch 2002 gives

Distance by Vertical Angle Measured Between Sea Horizon and Top of Object Beyond Sea Horizon

$$D = \sqrt{\left(\frac{\tan\alpha}{0.0002419}\right)^2 + \frac{H-h}{0.7349}} - \frac{\tan\alpha}{0.0002419}$$

in which D is the distance in nautical miles, a is the corrected vertical angle, H is the height of the top of the object above sea level in feet, and h is the height of eye of the observer above sea level in feet. The constants 0.0002419 and 0.7349 account for terrestrial refraction.

Setting H = 0 and solving for tan α gives the "exact" result

$$Ds = 60\tan^{-1}\left(\frac{h_f}{6076.1d_s} + \frac{d_s}{8268}\right)$$

For the small angles concerned (and retaining the excess of digits) this is gives the "approximate" form

$$Ds = 0.56578\frac{h_f}{d_s} + 0.4158d_s$$

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