

NFM has latitude 26° , find the θ of elevation θ of the sun at 3pm on Jan 20, 2001, where $D = -.1603$ and $w = .8602$

Remember: all is in Radians!

$$\sin \theta = \cos D \cos L \cos w + \sin D \sin L$$

$$\sin \theta = \cos(-.1603) \cos(.4538) \cos(.8602) + \sin(-.1603) \sin(.4538)$$

$$\sin \theta = (.9872)(.8988)(.6523) + (-.1596)(.4384)$$

$$\sin \theta = .5788 - .0699$$

$$\sin \theta = .5088$$

$$\sin^{-1}(.5088) = \theta$$

$$.5338 = \theta$$

$$.5338 \text{ rad or } 30.6^\circ$$

$$.5338 \left(\frac{180}{\pi} \right) = 30.583931$$

Page 125-126

For $\theta = 48^\circ$ of 4
and 50, 55, 59.

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Page 4 of 4