



Let angle BAD = 2·m

Extend AF to meet DC extended at H

Angle AHD =  $180^\circ - m - (180^\circ - 2m) = m$

Angles HFC, HEG, and HAD all equal m

Angle BFA = angle HFC = m, so triangle ABF is isosceles, and BF=BA=EG=444.000

Draw PG parallel with AE; angle PGE = m, angle GEP = m, so angle EPG =  $180^\circ - 2m$

Draw EP; angle APE = m, angle AEP =  $180^\circ - 2m$

Triangle ABE is congruent with triangle AEP, so angle BEA =  $180^\circ - 2m$

And BE = EA = EP + PG

In triangle BEA,  $2 \cdot AE \cdot \sin(90^\circ - m) = 444.000$

In triangle GDP,  $PG = 2 \cdot (283.743) \cdot \sin(90^\circ - m)$

$2 \cdot \sin(90^\circ - m) = 444.000/AE$

$(283.743) \cdot 444/AE = PG$ , but  $PG = AE$ , so  $(283.743) \cdot 444.000 = AE^2$

$AE^2 = 125,981.292$  and  $AE = 354.939$

In triangle PGD, by Law of Cosines:

$$\cos(180^\circ - 2m) = \frac{2 \cdot (283.743^2) - 354.939^2}{2 \cdot (283.743^2)} = 0.217603075$$

$180^\circ - 2m = 77^\circ 25' 54''$

$2m = 102^\circ 34' 06'' = \text{angle BAD}$