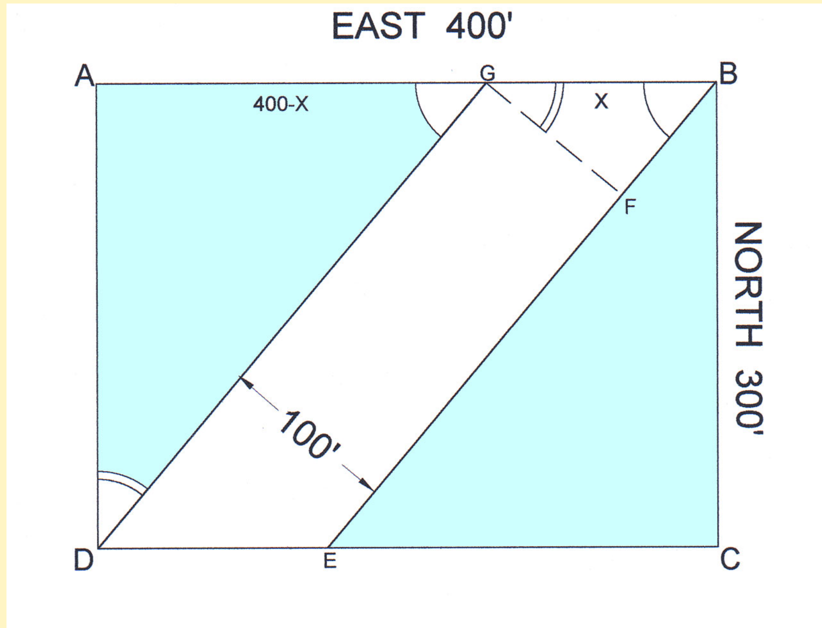


Solution to Problem Number 3

Angle GBE = Angle AGD and Angle BGF = Angle ADG

Let GB = x, then AG = 400'–x

$BF^2 = x^2 - 100^2$, since GF = 100'

AG : AD :: BF : GF, By similar triangles

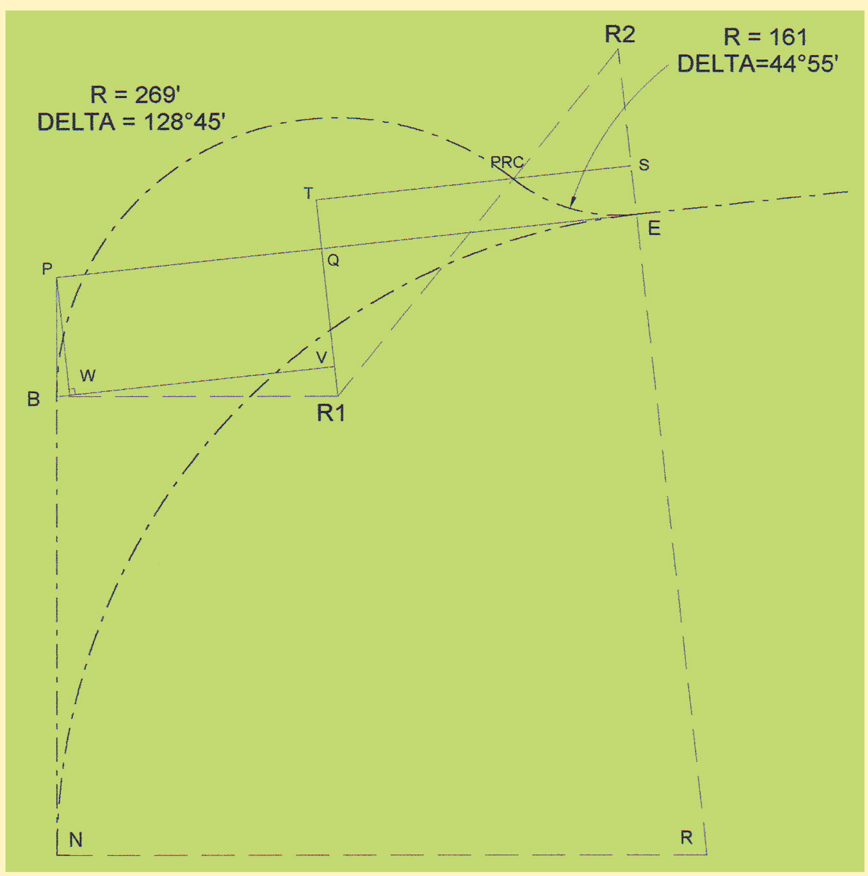
$$\frac{(400' - x)}{300'} = \sqrt{\frac{x^2 - 100^2}{100'}}$$

Expanding and solving for x by the quadratic equation yields x = 133.7117'

AG = 400' – x = 266.1352', AND GD = 401.1352' by the Pythagorean Theorem

The area is then 401.1352' times 100',

40,113.52 square feet, or 0.921 acres.



Solution to Problem Number 4

Draw the intersection of the tangents at P. Draw TS & BV parallel with PE. Draw PW & T-R1 parallel with R2-R (the extension of R2-E).

ANGLE E-R2-R1= 44°55'= ANGLE R2-R1-T. ANGLE B-R1-T=128°45'– 44°55'= 83°50'= Angle E-R-N, the Delta for the new curve. The new semi-tangent = PQ+QE = BV– BW+T-PRC+PRC-S.

PRC-S=161'sin 44°55'=113.6785', T-PRC= 269'sin 44°55'=189.9349'

SE = 161' – 161' cos 44°55' = 46.9903', R1-T = 269' cos 44°55' = 190.4882'

V-R1 = 269' sin 6°10' = 28.8962', SO QV = 190.4882' – 28.8962' – 46.9903' = 114.6017'.

BW = 114.6017' tan 6°10' = 12.3823' AND THE NEW SEMI-TANGENT = 558.675'.

The new radius is 558.675' divided by tan 41°55'=622.289'. The distance BN = 558.675' – PB = 558.675' – 114.6017' sec 6°10' = 558.675' – 115.269' = 443.406'