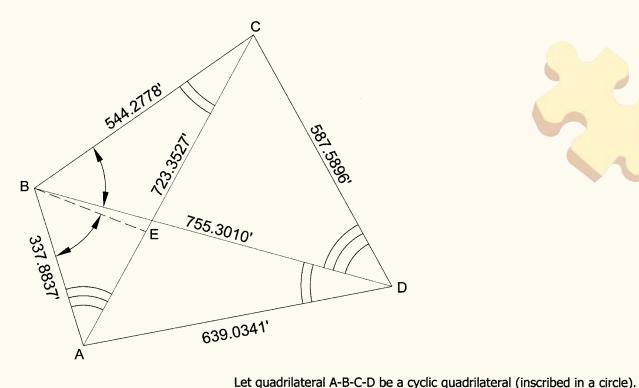


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Solution to Problem 119





Construct angle A-B-E = angle D-B-C. Angle C-A-B = angle C-D-B because they subtend a common chord, BC. Triangle ABE is therefore similar to triangle DBC, with all angles equal,

so, AE/AB = DC/DB and $AE \times DB = AB \times DC$(1)

Angle A-B-E = angle D-B-C (by construction).

Angle A-B-E + angle E-B-D = angle D-B-C + angle E-B-D,

But angle A-D-B = angle B-C-E because they subtend the common chord AB.

Triangle ABD is therefore similar to triangle EBC,

so AD/DB = EC/CB and EC x DB = AD x CB(2)

Adding (1) and (2), $AE \times DB + EC \times DB = AB \times DC + AD \times CB$.

 $(AE + EC) \times DB = AB \times DC + AD \times CB$

but AE + EC = AC

so, for a quadrilateral to be inscribed in a circle, $AC \times DB = AB \times DC + AD \times CB$.

For this problem, AC=723.3527, DB=755.3010, AB=337.8837, DC=587.5896,

AD=639.0341 and CB=544.2778

Does 723.3527 x 755.3010= 337.8837 x 587.5896 + 639.0341 x 544.2778 ?

546,349.0177 = 198,536.9481 + 347,812.0741

546,349.0177 = 546,349.0222

Close enough!





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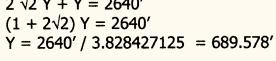
Solution to Problem 120

	X	X - Y
X		Y
	2A	A Y
	X	Y

$$Y^2 = A$$

 $X^2 = _2 Y^2$
 $X = \sqrt{2} Y$
 $3 X + X - Y + 3 Y = 5280'$
 $4 X + 2 Y = 5280'$
 $2 X + Y = 2640'$
 $2 \sqrt{2} Y + Y = 2640'$
 $(1 + 2\sqrt{2}) Y = 2640'$

 $X^2 = 2 A$



$$X = (\sqrt{2})(689.578) = 975.211'$$

NOTE THAT $X^2 = 951,036.27 \text{ ft}^2$ AND $Y^2 = 475,518.135 \text{ ft}^2$

