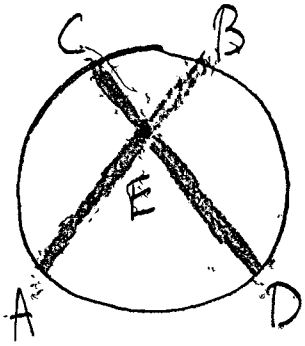
Geometry Tuesday 1-22-13 Class Notes

Ch 12-6 Segments in a Circle

Chord – Chord Product
Secant – Secant Product
Secant – Tangent Product
} Theorems

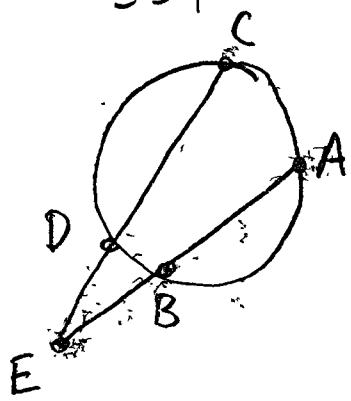
"Multiply segments"

CCP



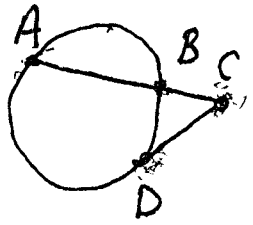
$AE \cdot ED = CE \cdot ED$

SSP



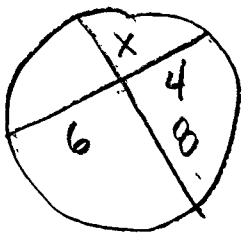
$AE \cdot BE = CE \cdot DE$

STP



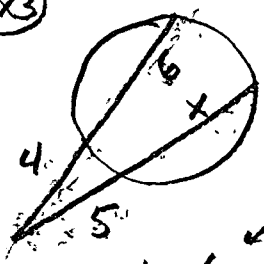
$AC \cdot BC = DC^2$

Ex 1



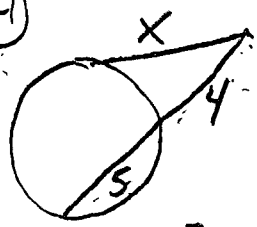
$8x = 24$
$x = 3$

Ex 3



$10 \cdot 4 = (x+5)5$
$40 = 5x + 25$
$15 = 5x$
$x = 3$

Ex 4



$9 \cdot 4 = x^2$
$36 = x^2$
$x = \pm 6$
$x = 6$

Recall:

QUADRATIC EQUATION IN STANDARD FORM

$$ax^2 + bx + c = 0$$

might be solved, if factorable, using MAGIC NUMBER METHOD:

sum = b
prod = ac

FBG, ~~ZPP~~

Also, the discriminant, d was used to tell if QE was factorable, plus other things:

$$d = b^2 - 4ac$$

$a =$ $(\ )^2 - 4(\ )(\ )$

$b =$

$c =$ $d =$

$d > 0$ 2 real solutions
↳ if perfect sq., factorable

$d = 0$ 1 real solution

$d < 0$ No real solutions

$\Rightarrow ax^2+bx+c=0$

To solve ANY QE $\Rightarrow$

$$x = \frac{-b \pm \sqrt{d}}{2a} \qquad d = b^2 - 4ac$$

QUADratic FORMULA

(EX) $2x^2 + 15 = -13x$

$2x^2 + 13x + 15 = 0$

$a = 2$

$b = 13$

$c = 15$

$b^2 - 4ac$

$(13)^2 - 4(2)(15)$

$169 - 120 = 49 = d$

$$x = \frac{-b \pm \sqrt{d}}{2a} = \frac{-13 \pm \sqrt{49}}{4}$$

$$x = \left\{\frac{-13+7}{4}, \frac{-13-7}{4}\right\}$$

$$x = \left\{\frac{-6}{4}, \frac{-20}{4}\right\}$$

$$x = \left\{-\frac{3}{2}, -5\right\}$$

CK ? ?

(ex) $(2x+3)(x-6) = 0$

$2x^2 - 12x + 3x - 18 = 0$

$2x^2 - 9x - 18 = 0$ SOLVE USING QF

$a = 2$

$b = -9$

$c = -18$

$b^2 - 4ac$

$(-9)^2 - 4(2)(-18)$

$81 + 144 = 225 = d$

$$x = \frac{-b \pm \sqrt{d}}{2a} = \frac{9 \pm \sqrt{225}}{4}$$

$$= \frac{9 \pm 15}{4}$$

$$= \left\{ \frac{9+15}{4}, \frac{9-15}{4} \right\}$$

$$= \left\{ 6, -\frac{3}{2} \right\}$$

Ex $3x^2 - 2x + 10 = 0$ SOLVE USING QF

$a = 3$

$b = -2$

$c = 10$

$b^2 - 4ac$

$(-2)^2 - 4(3)(10)$

$4 - 120 = -116 = d$

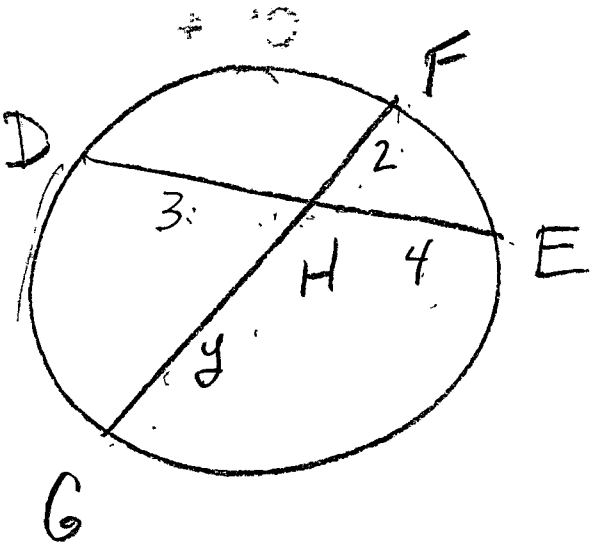
$$x = \frac{2 \pm \sqrt{-116}}{6}$$ No real solution

$\sqrt{-1} = i$

$$x = \frac{2 \pm i\sqrt{116}}{6}$$

COMPLEX SOLUTIONS

(12)



$2y = 12$

$\boxed{y = 6}$