

Algebra 2 TUESDAY 12-4-12 CLASS NOTES

Ch. 10-4 INVERSES OF TRIG. FUNCTIONS

⊗ $y = f(x) = \sin(x)$

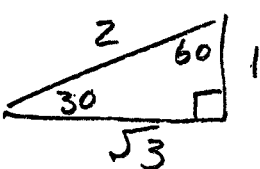
↑ ↑ ↑
dv iv iv
decimal degrees

$y = f^{-1}(x) = \sin^{-1}(x)$

↑ ↑ ↑
dv iv iv
degrees decimal

⊗ $\sin 30^\circ = \frac{1}{2} = .5$

$\sin^{-1}(.5) = 30^\circ$



$\sin^{-1}(x) = \text{ARCSIN}(x)$

$\cos^{-1}(x) = \text{ARCCOS}(x)$

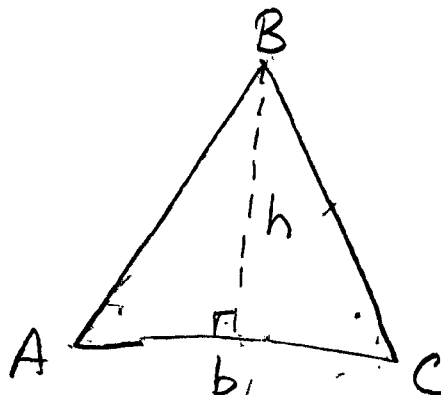
$\tan^{-1}(x) = \text{ARCTAN}(x)$



domains are restricted
to make functions

CH 10-5 LAW OF SINES

$$A = \frac{1}{2}bh$$



But:

$$\sin A = \frac{h}{c}$$

$$\therefore c \sin A = h$$

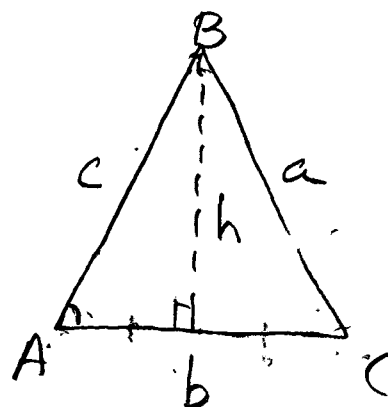
$$A = \frac{1}{2}b(c \sin A)$$

$$A = \frac{1}{2}bc \sin A$$

ALSO

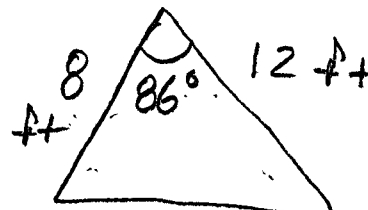
$$A = \frac{1}{2}ac \sin B$$

$$A = \frac{1}{2}ab \sin C$$



Any Δ , Area is $\frac{1}{2}$ the product of 2 sides times the sine of the angle between them.

Ex 1
Pg 722



$$A = \frac{1}{2}(8)(12) \sin 86^\circ$$

$$A = 47.9 \text{ ft}^2$$

*ACT

Using the 3 Area formulas, which have to be equal:

$$\frac{\frac{1}{2}bc\sin A}{\frac{1}{2}abc} = \frac{\frac{1}{2}ac\sin B}{\frac{1}{2}abc} = \frac{\frac{1}{2}ab\sin C}{\frac{1}{2}abc} \quad \text{Divide}$$

$$\boxed{\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}}$$

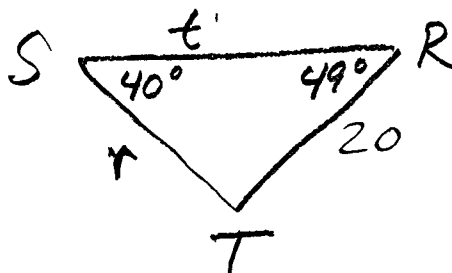
Law of Sines $\Rightarrow$ For ASA, AAS

$\Rightarrow$
Any $\triangle$

Note: For Right $\triangle \Rightarrow$

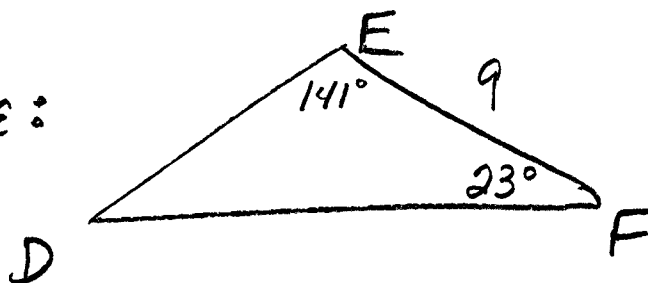
- PT
- SOH CAH TOA
- 30-60-90, 45-45-90

(EX2) "Solve"
pg 723
 $\Rightarrow$
Find everything!



EX B
Pg 724

Solve:



Do NOT use for SSA $\Rightarrow$ ACOLOS

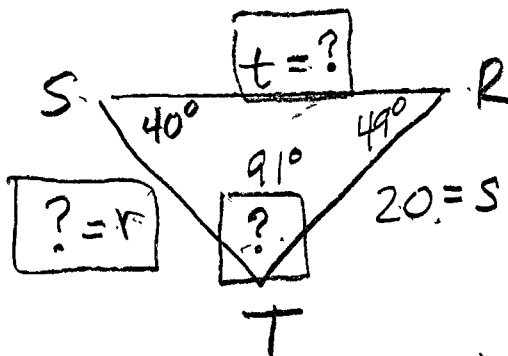
Do NOT use for $\left. \begin{matrix} SAS \\ SSS \end{matrix} \right\} \Rightarrow$ LOC

Do NOT use for AAA $\Rightarrow$ can't solve

see NEXT pg. for ex

EX2

PG723



AAE $\Rightarrow$ LOS

$$\text{Angle } T = 180 - (40 + 49) = 91^\circ = T$$

$$\frac{\sin 40}{20} = \frac{\sin 49}{r}$$

To find r

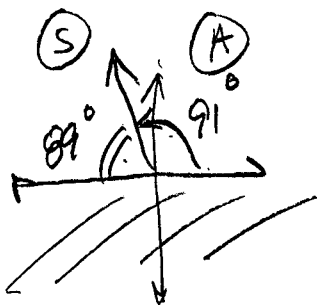
$$\frac{r \sin 40}{\sin 40} = \frac{20 \sin 49}{\sin 40}$$

$$r = \frac{20 (.7547)}{(.6428)} = 23.481$$

To find t

$$\frac{\sin 40^\circ}{20} = \frac{\sin 91^\circ}{t}$$

$$r = 23.5 \text{ units}$$

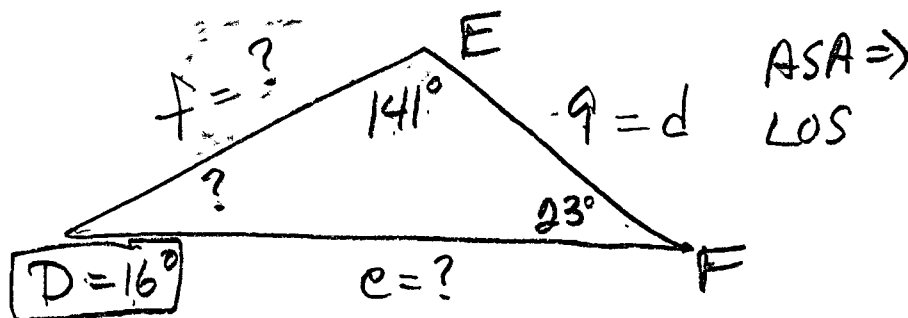


$$\frac{t \sin 40^\circ}{\sin 40} = \frac{20 \sin (89^\circ)}{\sin 40}$$

$$t = \frac{20 (.9998)}{(.6428)} = 31.108$$

$$t = 31.1 \text{ units}$$

Ex B
Pg 724



$$D = 180 - (141 + 23) = 16^\circ = D$$

Side f

~~$$\frac{\sin 16^\circ}{g} = \frac{\sin 23^\circ}{f}$$~~

~~$$f \sin 16^\circ = g \sin 23^\circ$$~~

$$f = \frac{g(\sin 23^\circ)}{\sin 16^\circ} = 12.758$$

$$\text{ref } A = 39^\circ$$

$$f = 12.8 \text{ units}$$

Side e

$$\frac{\sin 16^\circ}{g} = \frac{\sin 141^\circ}{e}$$

$$e \sin 16^\circ = g \sin 141^\circ$$

$$e = \frac{g(\sin 141^\circ)}{\sin 16^\circ} = 20.550$$

$$e = 20.6 \text{ units}$$