Trig 5.2

Find the values of trig ratios for all 6 trig functions
Determine (exact) trig values of special angles: handy angles
(30, 45, 60 degrees)
Express trig ratios as exact or approximate ratios

csc $\frac{h}{o}$

sec $\frac{h}{a}$

cot $\frac{a}{o}$

sin $\frac{o}{h}$

cos $\frac{a}{h}$

tan $\frac{o}{a}$

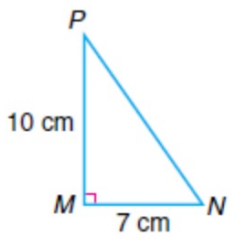
cofunctions

handy angles

whiteboards

Exact answers

4 **Find the values of the six trigonometric ratios for $\angle P$.**



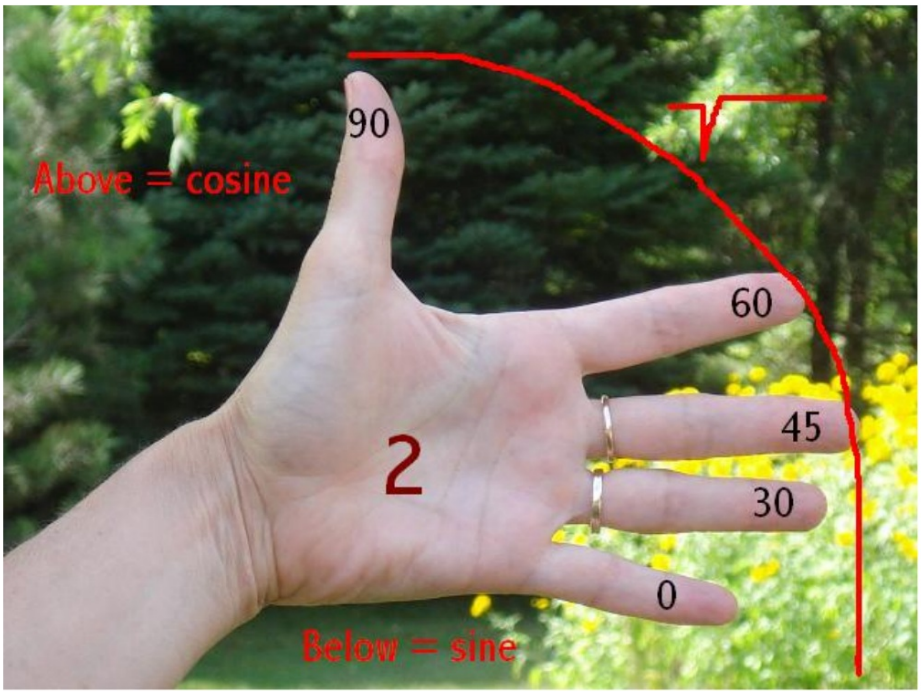
p. 287

Handy angles

θ	sin θ	cos θ	tan θ	csc θ	sec θ	cot θ
30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$ $\frac{1}{\sqrt{3}}$	$\frac{2}{1}$	$\frac{2}{\sqrt{3}}=\frac{2\sqrt{3}}{3}$	$\frac{\sqrt{3}}{1}$
45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{1}$	$\frac{2}{\sqrt{2}}=\sqrt{2}$	$\sqrt{2}$	$\frac{1}{1}$
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{1}$	$\frac{2}{\sqrt{3}}=\frac{2\sqrt{3}}{3}$	$\frac{2}{1}$	$\frac{1}{\sqrt{3}}=\frac{\sqrt{3}}{3}$

$\frac{\sqrt{1}}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{\sqrt{3}}{\sqrt{9}}=\frac{\sqrt{3}}{3}$ $\quad \frac{2}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{2\sqrt{2}}{2}$

Surprise quiz some day...


90
Above = cosine
60
45
2
30
0
Below = sine

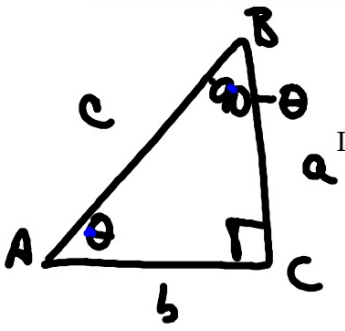
"of its complement"

P. 287

Cofunctions

$\sin\theta = \cos(90^\circ - \theta)$	$\cos\theta = \sin(90^\circ - \theta)$
$\tan\theta = \cot(90^\circ - \theta)$	$\cot\theta = \tan(90^\circ - \theta)$
$\sec\theta = \csc(90^\circ - \theta)$	$\csc\theta = \sec(90^\circ - \theta)$

Not the same as reciprocal functions



Draw triangle, where are complementary angles?

$\sin\theta = \frac{a}{c}$ $\quad \sin(90-\theta) = \frac{b}{c}$

$\cos\theta = \frac{b}{c}$ $\quad \cos(90-\theta) = \frac{a}{c}$

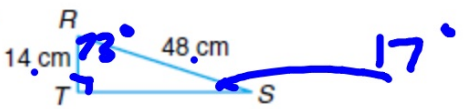
$\tan\theta = \frac{a}{b}$ $\quad \tan(90-\theta) = \frac{b}{a}$

complementary sin

"complementary"---duh

Find the angle: inverse sin...cos...etc.
Calculator in degrees (for now...)

20.



17°

* 45.9

$90 + x + 17 = 180$

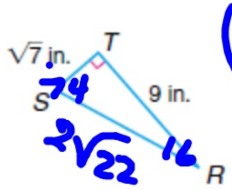
$-90 \qquad -90$

$x + 17 = 90$

$m\angle S = ?$

$\sin \frac{O}{H} = \frac{14}{48}$

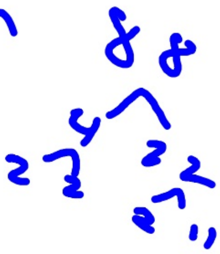
22.



$(\sqrt{7})^2 + 9^2$

$7 + 81 = h^2$

$\sqrt{88} = h$



$SR = 2\sqrt{22}$

$m\angle S = 74°$

$m\angle R = 16°$

$\tan R = \frac{\sqrt{7}}{9}$

Change to decimal form...

24. Use a calculator to determine the value of each trigonometric ratio.

a. sin 52° 47′ b. cos 79° 15′ c. tan 88° 22′ 45″

to

52.7833

0.7964

d. cot 36°

$$\tan 36 = \frac{1}{\cot 36}$$

$$\cot 36 = \frac{1}{\tan 36}$$

$$= 1.3764$$

Uh oh…No cotangent button on calc! :(