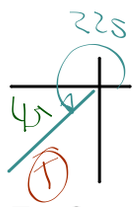
2.5 Review

Special angles: 30º, 45º and 60º are common angles in trig. You can determine the exact trig ratios for these angles by refering to these two trangles.

Ex. Determine the exact value of cos 225º and then sin 330º.

if $\theta = 225$

$\theta_r = 45$



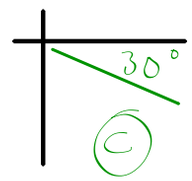
$\cos 45 = \frac{1}{\sqrt{2}}$

$\therefore \cos 225^\circ = \frac{-1}{\sqrt{2}}$

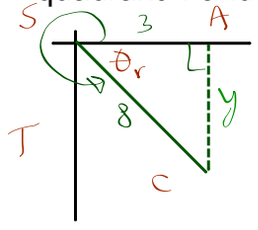
$\theta_r = 30^\circ$

$\sin 30^\circ = \frac{1}{2}$

$\therefore \sin 330^\circ = -\frac{1}{2}$



Ex. Suppose θ is an angle in standard position with terminal angle in quadrant 4 and cos θ = 3/8. What are the exact values of sin θ and tan θ?



$8^2 = 3^2 + y^2$

$\sqrt{64-9} = \sqrt{y^2}$

$y = \sqrt{55}$

$\sin\theta = -\frac{\sqrt{55}}{8}$

$\tan\theta = -\frac{\sqrt{55}}{3}$

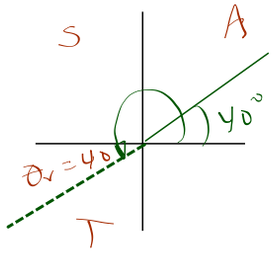
Ex. Solve for θ if $0 < \theta < 360$

a) tan θ = 0.85

$\theta = \tan^{-1}(0.85)$

$\theta = 40.3645...^\circ$

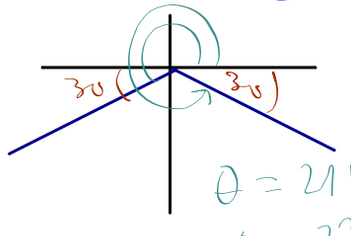
$\theta \doteq 40^\circ$ and 220°



b) sin θ = - 1/2

$\sin\theta = \frac{1}{2}$ comes from a special Δ

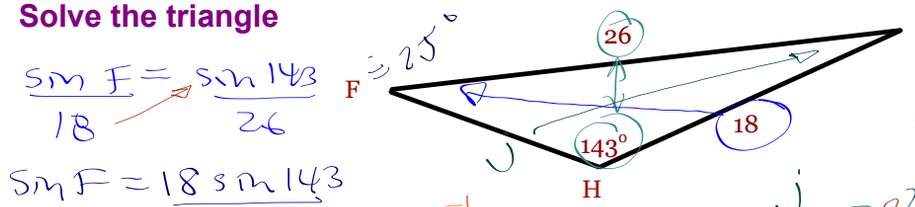
$\sin 30^\circ = \frac{1}{2}$



$\theta = 210^\circ$

$\theta = 330^\circ$

Solve the triangle



$\frac{\sin F}{18} = \frac{\sin 143}{26}$

$\sin F = \frac{18 \sin 143}{26}$

$(\sin F = 0.4166..)$ $\sin^{-1}$

$F \doteq 24.623°$

$F \doteq 25$

$J = 180° - 25° - 143°$

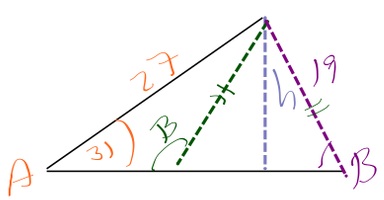
$\angle J = 12.377°$

$J = 12$

$\frac{j}{\sin J} = \frac{26}{\sin 143}$

$j \doteq 9.3$

Solve the following triangle if angle A = 31°, a = 19, and b = 27



$\frac{\sin 31°}{19} = \frac{\sin B}{27}$

$B \doteq 47°$

$\frac{\sin 31°}{h} = \frac{1}{27}$

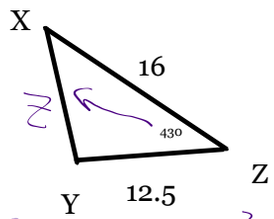
$h = 27 \sin 31°$

$h = 13.91$

$\therefore B = 180° - 47°$

$B = 133°$

Solve the following triangles

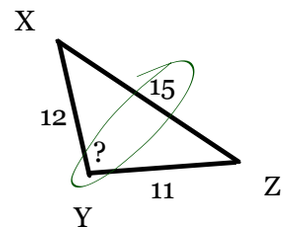


$z^2 = 16^2 + 12.5^2 - 2(16)(12.5)\cos 43°$

$\sqrt{z^2} \doteq \sqrt{119.71}$

$z = 10.94$

Now I can use the Sine Law!



$15^2 = 12^2 + 11^2 - 2(12)(11)\cos Y$

$\frac{15^2 - 12^2 - 11^2}{-2(12)(11)} = \cos Y$

$\frac{+40}{+264} = \cos Y$

$Y = 81.3°$

Pg. 126 # 1- 24