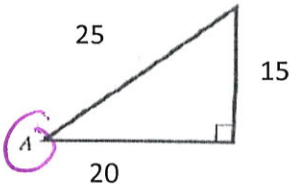
Review 2.1-2.3 Name Key

No Calculator! 1-12

1. Find the exact values for sin A, cos A, and tan A in the figure.



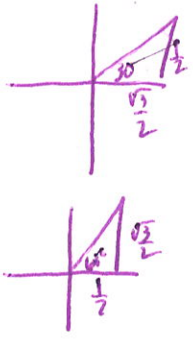
$\frac{15}{20}$

Sin A = $\frac{3}{5}$

Cos A = $\frac{4}{5}$

Tan A = $\frac{3}{4}$

2. Find exact values of the trigonometric functions to complete the table.



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

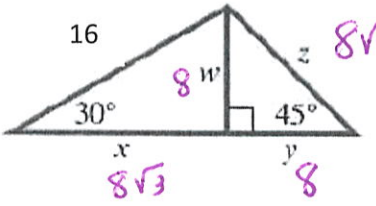
Find the exact variable for each variable.

$\times\frac{1}{2}$ $\times\frac{\sqrt{3}}{2}$ $\times 1$

$x = 16$

$16(\frac{1}{2})$ $16\frac{\sqrt{3}}{2}$

8 $8\sqrt{3}$



$8\sqrt{2}$

$\frac{\sqrt{3}}{2}$ $\frac{\sqrt{2}}{2}$ 1

$x\frac{\sqrt{2}}{2} = 8$

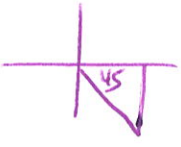
$x = 8\frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

3) w = 8 x = $8\sqrt{3}$

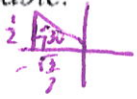
4) y = 8 z = $8\sqrt{2}$

Find exact values of the six trigonometric functions for each angle. Rationalize denominators when applicable.

$1035 - 720 = 315°$



5. 150°



Sin x = $\frac{1}{2}$ Csc x = 2

Cos x = $-\frac{\sqrt{3}}{2}$ Sec x = $-\frac{2\sqrt{3}}{3}$

Tan x = $-\frac{\sqrt{3}}{3}$ Cot x = $-\sqrt{3}$

6. -120°

Sin x = $-\frac{\sqrt{3}}{2}$ Csc x = $-\frac{2\sqrt{3}}{3}$

Cos x = $-\frac{1}{2}$ Sec x = -2

Tan x = $\sqrt{3}$ Cot x = $\frac{\sqrt{3}}{3}$

7. 1035°

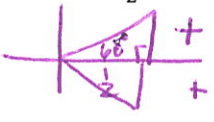
Sin x = $-\frac{\sqrt{2}}{2}$ Csc x = $-\sqrt{2}$

Cos x = $\frac{\sqrt{2}}{2}$ Sec x = $+\sqrt{2}$

Tan x = -1 Cot x = -1

Find all exact values of θ in the interval [0°, 360°) that have the given function value.

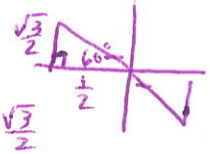
8) $\cos\theta = \frac{1}{2}$



9) $\csc\theta = -\sqrt{2}$ ⇒ $\sin -\frac{\sqrt{2}}{2}$

10) $\cot\theta = \frac{-\sqrt{3}}{3}$

$\tan = -\sqrt{3}$ $\frac{\sqrt{3}}{2}$ / $\frac{1}{2}$



8) 60°, 300°

9) 225°, 315°

10) 120°, 300°

Determine whether the statement is true or false. Show all work. If false, tell why.

11) $\cos(120° + 60°) = \cos 120° \cos 60° - \sin 120° \sin 60°$

$\cos(180°) = -\frac{1}{2}\left(\frac{1}{2}\right) - \frac{\sqrt{3}}{2}\left(\frac{\sqrt{3}}{2}\right)$

$-1 = -\frac{1}{4} - \frac{3}{4}$

$-1 = -1$

11) True

12) $\sin 30° + \sin 60° = \sin(30° + 60°)$

$\frac{1}{2} + \frac{\sqrt{3}}{2} = \sin(90)$

$\frac{1+\sqrt{3}}{2} = 1$

12) $\frac{1}{2} + \frac{\sqrt{3}}{2} \neq 1$ False

Use a **calculator** to approximate each value.

13. $\sin 35° 14'$

14. $\csc(-148° 25')$ $\frac{1}{\sin}$

13) .5769076142

14) -1.909351161

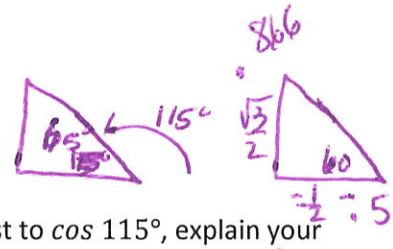
Use a **calculator** to find the value of θ, to the nearest tenth, in the interval [0°, 90°] that satisfies each statement.

15. $\tan\theta = 1.569685577$

16. $\csc\theta = 1.471797481$ $\frac{1}{\sin\theta}$ $\frac{1}{1.471797481}$

15) 57.5°

16) 42.8°



If $\frac{\sqrt{2}}{2} \approx 0.707$ *and* $\frac{\sqrt{3}}{2} \approx 0.866$

17) Without using a calculator, determine which of the following numbers is closest to *cos* 115°, explain your answer using complete sentences. a) 0.4 b) 0.6 c) 0 d) - 0.4 e) -0.6 cos D

For cos θ, when angle gets bigger the cos θ gets smaller so if cos 60° = -.5, then cos 65° should be slightly smaller -0.4.

18) Without using a calculator, determine which of the following numbers is closest to *sin* 115°, explain your answer using complete sentences. a) 0.9 b) 0.1 c) 0 d) - 0.9 e) -0.1 A

For sin θ, when θ gets larger the sin gets larger so if sin 60° ≈ .866, then sin 65° ≈ .9 slightly larger.

19) For what angles θ between 0° and 360° does $\cos\theta = -\sin\theta$? Sin θ and cos θ are opposite in 2nd & 4th quadrants $\boxed{135°, 315°}$

20) For what angles θ between 0° and 360° does $\cos\theta = \sin\theta$? Sin θ and cos θ are equal in 1st and 3rd quadrant $\boxed{45°, 225°}$