9.3 Unit Circle and Radians

Use a calculator to find the APPROXIMATE value for each of the following. Round to nearest hundredth.

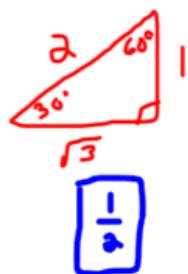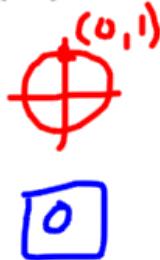| 1. $\cos(150°)$	2. $\tan 210°$	3. $\sin(\pi)$	4. $\sin(-120°)$
-0.87	0.58	$\bigcirc$	-0.87
5. $\tan\left(\frac{2\pi}{3}\right)$	6. $\sin\left(\frac{\pi}{5}\right)$	7. $\cos(23°)$	8. $\cos\pi$
-1.73	0.59	0.92	-1

Use the unit circle and special right triangles to find the EXACT value. NO DECIMALS!

9. $\sin(30°)$

$\boxed{\frac{1}{2}}$

10. $\cos(90°)$

$(0,1)$

$\boxed{0}$

11. $\tan(30°)$

$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$

12. $\cos\left(\frac{\pi}{3}\right) = \cos(60°)$

$\boxed{\frac{1}{2}}$

13. $\sin\left(\frac{\pi}{2}\right) = \sin(90°)$

$(0,1)$

$\boxed{1}$

14. $\sin(0°)$

$(1,0)$

$\boxed{0}$

15. $\cos\left(\frac{\pi}{4}\right) = \cos(45°)$

$\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{\sqrt{2}}{2}}$

16. $\sin(\pi)$

$(-1,0)$

$\boxed{0}$

17. $\sin(360°)$

$(1,0)$

$\boxed{0}$

18. $\tan(60°)$

$\frac{\sqrt{3}}{1} = \boxed{\sqrt{3}}$

19. $\tan(90°)$

$(0,1)$
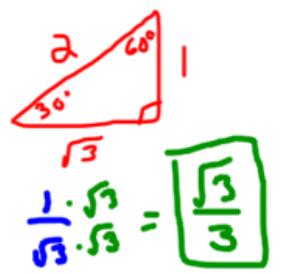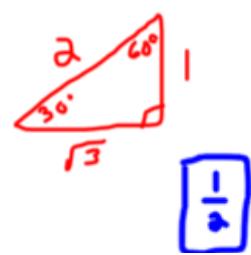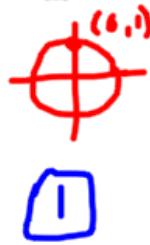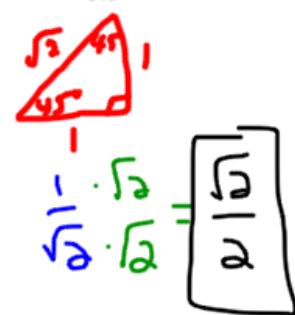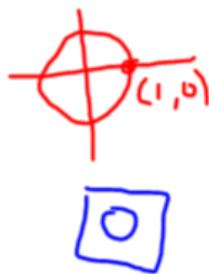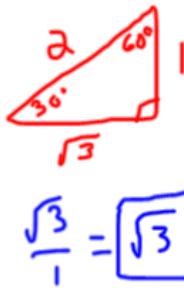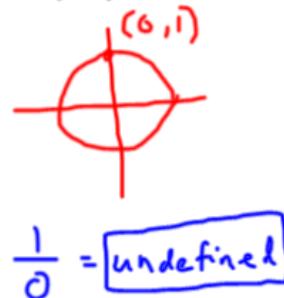
$\frac{1}{0} = \boxed{\text{undefined}}$

20. $\cos\left(\frac{\pi}{6}\right) = \cos(30°)$

$\boxed{\frac{\sqrt{3}}{2}}$
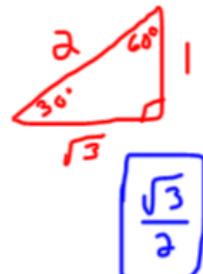
Fill in the table with EXACT values. NO DECIMALS!

9. $f(\theta) = \sin(\theta)$
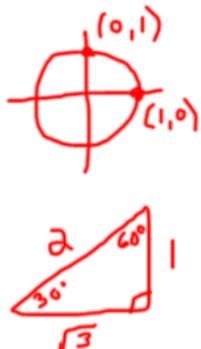
θ	$f(\theta)$
0°	O
30°	$\frac{1}{2}$
45°	$\frac{\sqrt{2}}{2}$
60°	$\frac{\sqrt{3}}{2}$
90°	1

9. $f(\theta) = \cos(\theta)$

θ	$f(\theta)$
0π	1
$\frac{\pi}{6}$	$\frac{\sqrt{3}}{2}$
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
$\frac{\pi}{3}$	$\frac{1}{2}$
$\frac{\pi}{2}$	O

Fill in the table with APPROXIMATE values. Round to the nearest hundredth.

9. $f(\theta) = \sin(2\theta)$

θ	$f(\theta)$
0°	O
30°	0.87
45°	1
60°	0.87
90°	O

9. $f(\theta) = \cos(\theta) + 2$

θ	$f(\theta)$
0π	3
$\frac{\pi}{6}$	2.87
$\frac{\pi}{4}$	2.71
$\frac{\pi}{3}$	2.5
$\frac{\pi}{2}$	2

Solve the following.

27. $(x-2)^2 + 7 = 27$
$\quad\quad\quad \underline{-7} \quad \underline{-7}$
$\sqrt{(x-2)^2} = \sqrt{20}$
$x - 2 = \pm\sqrt{20}$
$\underline{+2} \quad\quad \underline{+2}$
$x = 2 \pm \sqrt{20}$
$\boxed{x = 2 \pm 2\sqrt{5}}$

28. $9 = 2(b)^3$
$\frac{9}{2} \quad\quad \frac{}{2}$
$\sqrt[3]{4.5} = \sqrt[3]{b^3}$
$\boxed{b = 1.65}$

29. $\frac{20}{-4} = \frac{-4(2)^t}{-4}$
$-5 = 2^t$
$\log_2 -5 = \log_2 2^t$
$\log_2 -5 = t$
$\uparrow$
NO SOLUTION!