

Evaluate #1-6. Give all answers in **radians**. Non-Calculator Portion

1. $\arccos\left(-\frac{1}{2}\right)$ 1. _____

2. $\arcsin\left(-\frac{\sqrt{3}}{2}\right)$ 2. _____

3. $\arctan(1)$ 3. _____

4. $\arccos\left(\sin\frac{\pi}{2}\right)$ 4. _____

5. $\arctan(\cos\pi)$ 5. _____

6. $\arcsin\left(\cos\frac{5\pi}{6}\right)$ 6. _____

7. Evaluate: $\sin\left(\arccos\left(\frac{-2}{7}\right)\right)$ 7. _____

8. Evaluate: $\tan(\arccos u)$ 8. _____

For #9-12, find **all** solutions.

The number of blanks indicates the number of solutions!

9. $10\sin 2x = -5$ 9. _____

$$10. \cos\left(\frac{x}{2}\right) = -1$$

$$11. 8 \tan\left(\frac{x}{3}\right) + 5 = -3$$

10. _____

11. _____

$$12. \csc x = -\sqrt{2}$$

12. _____

For #13-15, find all solutions in the interval $[0, 2\pi)$. The number of blanks indicates the number of solutions!

$$13. 2 \sin x \cos x + \cos x = 0$$

13. _____

$$14. \csc^2 x = \csc x - 2$$

14. _____

$$15. 2 \cos^2 x - 5 \cos x - 3 = 0$$

15. _____

Calculator PortionFind all solutions in the interval $[0, 2\pi]$. Round to *three decimal places*.

16. $\cos x = -.578$

16. _____

17. $\cot x = -3.185$

17. _____

18. $3\cos^2 x - 4\cos x - 4 = 0$

18. _____

19. $\tan x \sec x + 3 \tan x = 0$

19. _____

Extra Credit!!

20. $\sin^2 x + 5\sin x - 1 = 0$

20. _____

50

Evaluate #1-6. Give all answers in radians. Non-Calculator Portion

1. $\arccos\left(-\frac{1}{2}\right)$  1. $\frac{2\pi}{3}$ 2

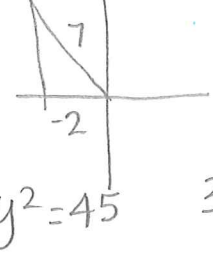
2. $\arcsin\left(-\frac{\sqrt{3}}{2}\right)$  2. $-\frac{\pi}{3}$ 2

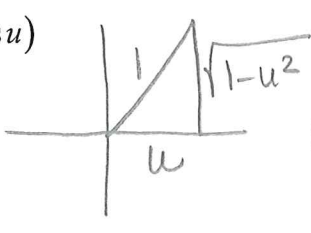
3. $\arctan(1)$  3. $\frac{\pi}{4}$ 2

4. $\arccos\left(\sin\frac{\pi}{2}\right)$ 
 $\arccos(1)$ 4. 0 3

5. $\arctan(\cos\pi)$ 
 $\arctan(-1)$ 5. $-\frac{\pi}{4}$ 3

6. $\arcsin\left(\cos\frac{5\pi}{6}\right)$ 
 $\arcsin\left(-\frac{\sqrt{3}}{2}\right)$ 6. $-\frac{\pi}{3}$ 3

7. Evaluate: $\sin\left(\arccos\left(\frac{-2}{7}\right)\right)$ 
 $(-2)^2 + y^2 = 7^2$
 $4 + y^2 = 49$
 $y^2 = 45$ $3\sqrt{5}$ 7. $\frac{3\sqrt{5}}{7}$ 3

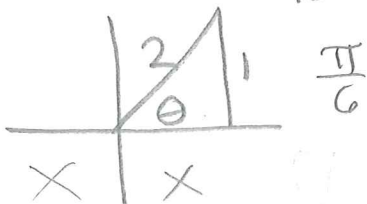
8. Evaluate: $\tan(\arccos u)$ 
 $u^2 + y^2 = 1^2$
 $y^2 = 1 - u^2$ 8. $\frac{\sqrt{1-u^2}}{u}$ 3

For #9-12, find **all** solutions.

The number of blanks indicates the number of solutions!

9. $10\sin 2x = -5$

$\sin 2x = \frac{-5}{10} = -\frac{1}{2}$



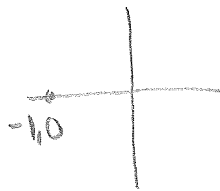
$\frac{7\pi}{6} \pm 2k\pi = 2x$

$\frac{11\pi}{6} \pm 2k\pi = 2x$

9. $\frac{7\pi}{12} \pm k\pi$ 4

$\frac{11\pi}{12} \pm k\pi$

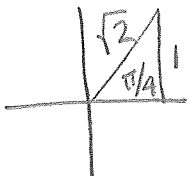
$$10. \cos\left(\frac{x}{2}\right) = -1$$



$$\pi \pm 2k\pi = \frac{x}{2}$$

$$12. \csc x = -\sqrt{2}$$

$$\sin x = -\frac{1}{\sqrt{2}}$$



$$\frac{5\pi}{4} \pm$$

$$11. 8 \tan\left(\frac{x}{3}\right) + 5 = -3$$

$$8 \tan \frac{x}{3} = -8$$

$$\tan \frac{x}{3} = -1$$

$$3 \cdot \frac{3\pi}{4} \pm k\pi = \frac{x}{3} \cdot 3$$

$$\frac{7\pi}{4} \pm k\pi =$$

$$10. \underline{2\pi \pm 4k\pi = x} \quad 2$$

$$11. \underline{\frac{9\pi}{4} \pm 3k\pi = x} \quad 2$$

$$12. \underline{\frac{5\pi}{4} \pm 2k\pi}$$

$$\underline{\frac{7\pi}{4} \pm 2k\pi}$$

3

For #13-15, find all solutions in the interval $[0, 2\pi)$. The number of blanks indicates the number of solutions!

$$13. 2 \sin x \cos x + \cos x = 0$$

$$\cos x (2 \sin x + 1) = 0$$

$$\cos x = 0$$

$$\sin x = -\frac{1}{2} = \frac{\pi}{6}$$



$$13. \underline{\frac{\pi}{2}}$$

$$\underline{\frac{3\pi}{2}}$$

$$\underline{\frac{7\pi}{6}}$$

$$\underline{\frac{11\pi}{6}}$$

4

$$14. \csc^2 x = \csc x - 2$$

$$\csc^2 x - \csc x + 2 = 0$$

$$14. \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}}$$

$$15. 2 \cos^2 x - 5 \cos x - 3 = 0$$

$$(2x+1)(x-3)$$

$$x = -1/2$$

$$x = 3$$

$$\cos x = -1/2$$

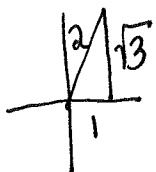
No Sol

$$\frac{\pi}{3}$$

$$15. \underline{\frac{2\pi}{3}}$$

$$\underline{\frac{4\pi}{3}}$$

2



13

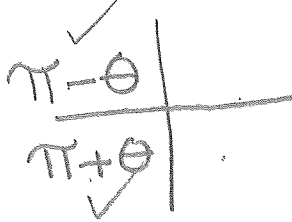
Calculator Portion

Find all solutions in the interval $[0, 2\pi]$. Round to three decimal places.

16. $\cos x = -.578$

$\cos^{-1}(.578)$

$\theta = .955$



16. $\frac{2.187}{4.097}$

17. $\cot x = -3.185$

$\frac{1}{\cot x} = \frac{1}{3.185}$

$\theta = .304$

$\tan x = .314$



17. $\frac{2.837}{5.979}$

18. $3\cos^2 x - 4\cos x - 4 = 0$

$3x^2 - 4x - 4 = 0$

$(3x + 2)(x - 2) = 0$

$3x + 2 = 0$

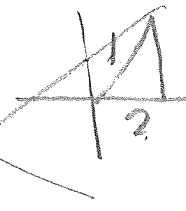
$\cos x = -2/3$

$\cos^{-1}(2/3) =$

$\theta = .841$

~~$x - 2 = 0$~~

~~$\cos x = 2$~~



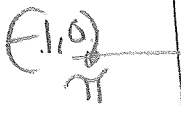
18. $\frac{2.301}{3.98}$
no sol
no sol.

19. $\tan x \sec x + 3 \tan x = 0$

$\tan x (\sec x + 3) = 0$

$\tan x = 0$

$\frac{y}{x} = \frac{0}{1}$



$\sec x = -3$

$\frac{1}{\sec x} = -\frac{1}{3}$

$\cos x = -1/3$

$\cos^{-1}(1/3) = 1.23$

$\theta = -1.23$

$\theta = +1.23$



19. $\frac{0}{\pi = 3.14}$
 $\frac{1.911}{4.373}$

Extra Credit!!

20. $\sin^2 x + 5 \sin x - 1 = 0$

20. _____

| | |
|----------------|-----------------|
| S | A |
| $\pi - \theta$ | θ |
| $\pi + \theta$ | $2\pi - \theta$ |
| T | C |