East Los Angeles College
Department of Mathematics
Math 241
Test 1

Solutions

Show all work for credit- No calculators

Convert the following radian measures to degrees.

1. $\frac{\pi}{3}$ $\frac{180^\circ}{3}$ 60° ✓

2. $\frac{\pi}{4}$ $\frac{180^\circ}{4}$ 45° ✓

20 ✓

Convert the following degree measure to radians.

3. 225° $225^\circ \cdot \frac{\pi}{180^\circ}$ $\frac{225\pi}{180}$ $\frac{5 \cdot 3 \cdot 3 \cdot 5 \cdot \pi}{2 \cdot 2 \cdot 3 \cdot 3 \cdot 2}$ $\frac{5\pi}{4}$ ✓

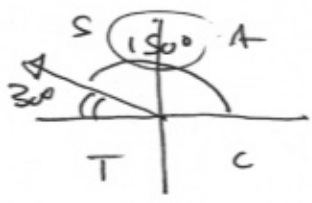
4. 300° $300^\circ \cdot \frac{\pi}{180^\circ}$ $\frac{300\pi}{180}$ $\frac{30\pi}{18}$ $\frac{2 \cdot 3 \cdot 5\pi}{2 \cdot 3 \cdot 3}$ $\frac{5\pi}{3}$ ✓

Determine the following trigonometric ratios.

5. $\tan(0) = 0$ ✓

6. $\sin\left(\frac{5\pi}{6}\right) = \frac{1}{2}$ ✓

$\frac{5 \cdot 180^\circ}{6}$ $5 \cdot 30^\circ$ 150°



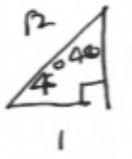
6 ✓

7. $\cos\left(-\frac{\pi}{4}\right)$

4

$-45°$

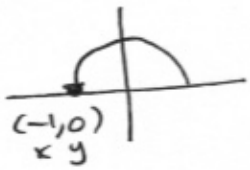
$\cos(-45) = \cos(45°)$



$\frac{1}{\sqrt{2}}$ | $\frac{\sqrt{2}}{2}$ ✓

8. $\cot(-\pi)$

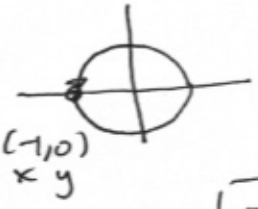
$-\cot(\pi) = -\frac{x}{y}$



$-\frac{-1}{0}$

undefined ✓

9. $\sec(3\pi)$ $\frac{1}{\cos(3\pi)}$



$\frac{1}{-1}$

-1 ✓

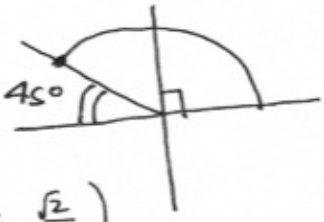
10. $\sin\left(\frac{3\pi}{4}\right) = y$

4

$3 \cdot 45°$

$135°$

$\frac{\sqrt{2}}{2}$ ✓



$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

x y

11. $\cos\left(-\frac{3\pi}{4}\right)$

$\cos\left(\frac{3\pi}{4}\right)$

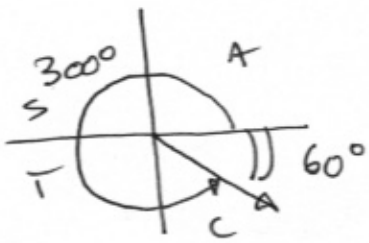
$3 \cdot 45°$

$\cos(135°) = x$

$-\frac{\sqrt{2}}{2}$ ✓

12. $\tan\left(-\frac{5\pi}{3}\right) = -\tan\left(\frac{5\pi}{3}\right)$

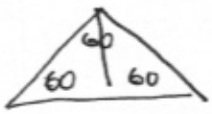
$-\tan(300°)$

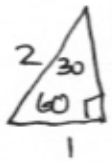


$\frac{\sqrt{3}}{1}$

$-\sqrt{3}$

✓





6 ✓

Determine whether the following functions are even, odd, or neither.

13. $f(x)=x^3\cos(x)$

$f(-x) = (-x)^3 \cos(-x)$

$= -x^3 \cos(x)$

$= -f(x)$ ✓

| odd | ✓

14. $f(x)=\sin(x)\tan(x)$

$f(-x) = \sin(-x)\tan(-x)$

$= -\sin(x)(-\tan(x))$

$= \sin(x)\tan(x)$

| even | $= f(x)$ ✓

✓

15. $f(x) = x + \sin(x)\tan(x)$

$f(-x) = -x + \sin(-x)\tan(-x)$

$= -x - \sin(x)(-\tan(x))$

$= -x + \sin(x)\tan(x)$

| neither | ✓

✓

16. $f(x) = x^2\cos(x)$

$f(-x) = (-x)^2 \cos(-x)$

$= x^2 \cos(x)$

$= f(x)$

| even | ✓

✓

8 ✓