

East Los Angeles College
Department of Mathematics
Math 241
Test 1

36 ✓

Show all work for credit- No calculators

Convert the following radian measures to degrees.

1. $\frac{\pi}{3}$

$\boxed{60^\circ}$

2. $\frac{\pi}{4}$

$\boxed{45^\circ}$

Convert the following degree measure to radians.

3. 225°

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

4. 300°

$\boxed{\frac{5\pi}{3}}$

12 ✓

Determine the following trigonometric ratios.

5. $\tan(0)$

$\boxed{0}$

6. $\sin\left(\frac{5\pi}{6}\right)$

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

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

$\boxed{\frac{\sqrt{2}}{2}}$

8. $\cot(-\pi)$

$\boxed{\text{undefined}}$

9. $\sec(3\pi)$

$\boxed{-1}$

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

$\boxed{\frac{\sqrt{2}}{2}}$

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

$\boxed{-\frac{\sqrt{2}}{2}}$

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

$\boxed{-\sqrt{3}}$

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

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

odd

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

even

$y = -\sin(2x)$

Determine the following.

15. Amp

1

16. Period

π

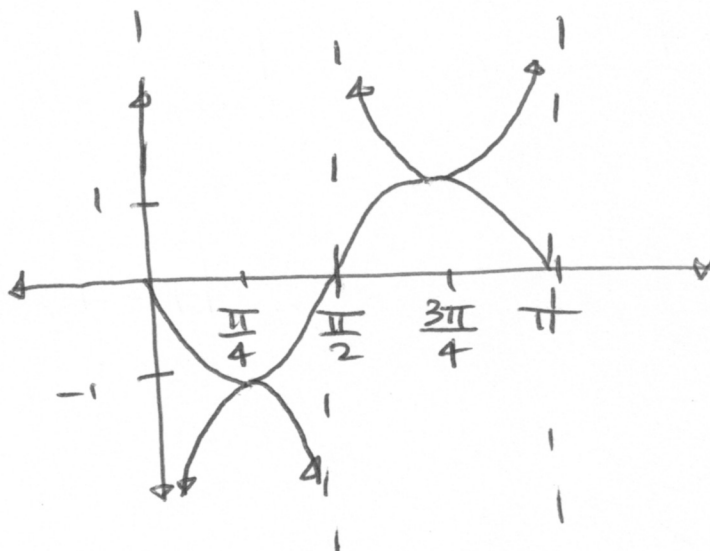
17. Period of one cycle

interval

$[0, \pi]$

18. Sketch the curve (use graph paper).

19 Sketch the reciprocal of this curve, $y = -\csc(2x)$



10

$$y = 4 \cos\left(3x + \frac{\pi}{2}\right)$$

Determine the following. ✓

25. Amp

(4) ✓

26. Period

$\frac{2\pi}{3}$ ✓

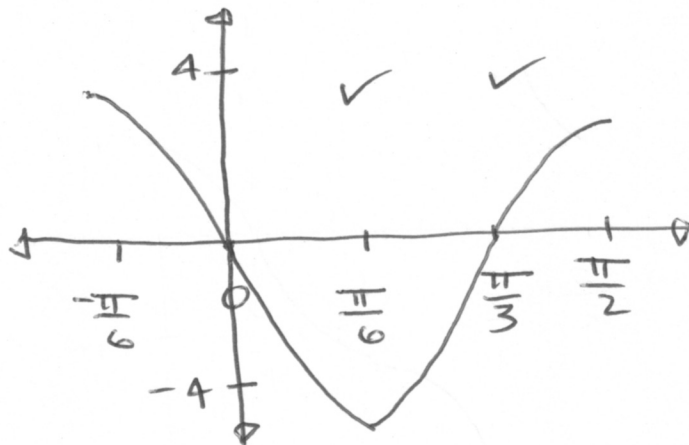
27. Period of one cycle

28. Sketch the curve (use graph paper).

note

$$b = -\frac{\pi}{6}$$

$$\left[-\frac{\pi}{6}, \frac{\pi}{2}\right]$$



6 ✓

math 241 Test 1

$$(1) \frac{\pi}{3} = \frac{180}{3} = 60^\circ$$

$$(2) \frac{\pi}{4} = \frac{180}{4} = 45^\circ$$

$$(3) 225^\circ = 225^\circ \cdot \frac{\pi}{180^\circ}$$

$$= \frac{225\pi}{180} = \frac{\cancel{5} \cdot 45 \cdot \pi}{\cancel{4} \cdot 36}$$

$$= \frac{\cancel{9} \cdot 5 \pi}{\cancel{9} \cdot 4} = \left(\frac{5\pi}{4} \right)$$

$$(4) 300^\circ = 300^\circ \cdot \frac{\pi}{180^\circ} = \frac{300\pi}{180}$$

$$= \frac{30\pi}{18} = \frac{\cancel{6} \cdot 5 \cdot \pi}{\cancel{6} \cdot 3} = \left(\frac{5\pi}{3} \right)$$

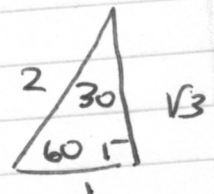
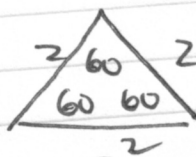
$$(5) \tan(0) = 0$$

$$(6) \sin\left(\frac{5\pi}{6}\right) = \sin\left(\frac{5 \cdot 180}{6}\right) = \sin(150^\circ)$$

note



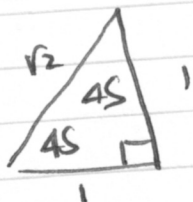
$$\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$$



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

$$(7) \cos\left(-\frac{\pi}{4}\right) = \cos\left(\frac{\pi}{4}\right) = \cos(45^\circ)$$

even

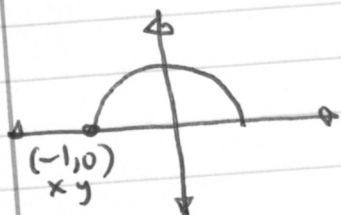


$$\cos(45) = \left(\frac{1}{\sqrt{2}}\right)$$

$$(8) \cot(-\pi) = -\cot(\pi)$$

$$= -\frac{1}{\tan(\pi)} = -\frac{1}{\tan(180^\circ)}$$

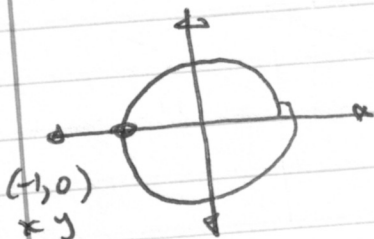
$$= -\frac{1}{0} \quad \text{undefined}$$



$$\tan(180^\circ) = \frac{0}{-1} = 0$$

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

$$= -1$$



$$(10) \sin\left(\frac{3\pi}{4}\right) = \sin(3 \cdot 45^\circ)$$

$$= \sin(135^\circ)$$



$$\neq \sin(45^\circ) = \frac{1}{\sqrt{2}}$$

ie, $\sin(135^\circ) = \left(\frac{1}{\sqrt{2}}\right)$

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

$$= \cos(3 \cdot 45^\circ) = \cos(135^\circ)$$

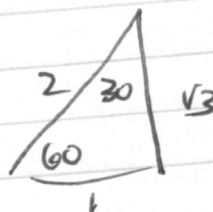
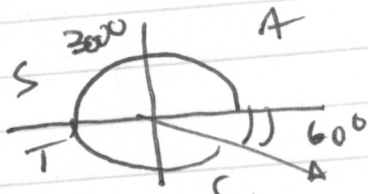
note (10) $\cos(45^\circ) = \frac{1}{\sqrt{2}}$

But, 135° in Q II

$$\cos(135^\circ) = \left(-\frac{1}{\sqrt{2}}\right)$$

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

$$= -\tan(5 \cdot 60^\circ) = -\tan(300^\circ)$$



$$\tan(60^\circ) = \frac{\sqrt{3}}{1}$$

$$\tan(300^\circ) = \left(-\sqrt{3}\right)$$

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

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

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

$$= -f(x) \quad ; \quad f \text{ is odd}$$

$$(14) \quad f(x) = \sin(-x) + \tan(-x)$$

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

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

$$= f(x) \quad ; \quad f \text{ is even}$$

$$y = -\sin(2x) \quad ; \quad k=2$$

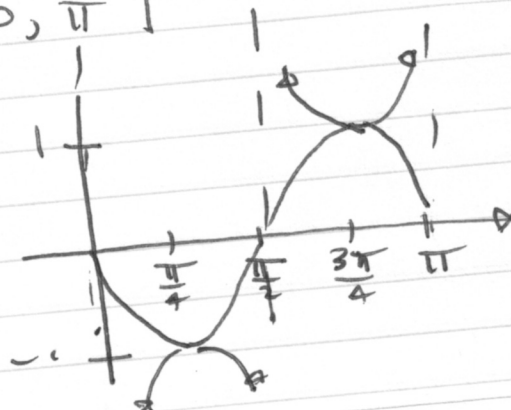
$$(15) \quad \text{amp} = |-1| = (1)$$

$$(16) \quad p = \frac{2\pi}{2} = (\pi)$$

$$(17) \quad [0, \pi]$$

(18)

(19)



$$y = \cos(3\pi x)$$

(20)

$$\left[-\frac{\pi}{6}, -\frac{\pi}{6} + \frac{2\pi}{3}\right]$$

$$\left[-\frac{\pi}{6}, -\frac{\pi}{6} + \frac{4\pi}{6}\right]$$

$$\left[-\frac{\pi}{6}, \frac{3\pi}{6}\right]$$

$$\left[-\frac{\pi}{6}, \frac{\pi}{2}\right]$$

