

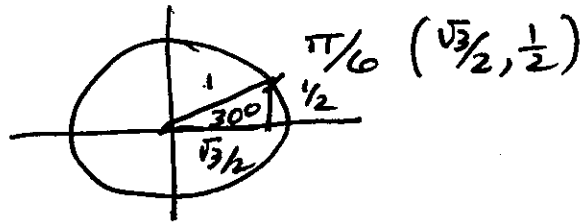
Practice Problems.

§5.2

Evaluate. Give exact values.
Do not use a calculator.

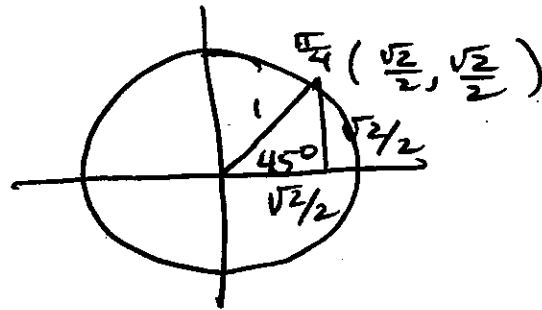
① $\sin \frac{\pi}{6}$

$= \frac{1}{2}$



②

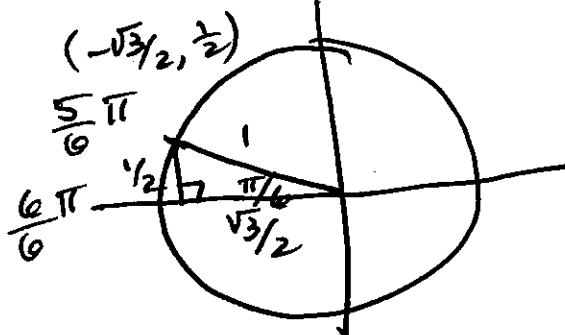
$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$



③

$\sin \frac{5\pi}{6}$

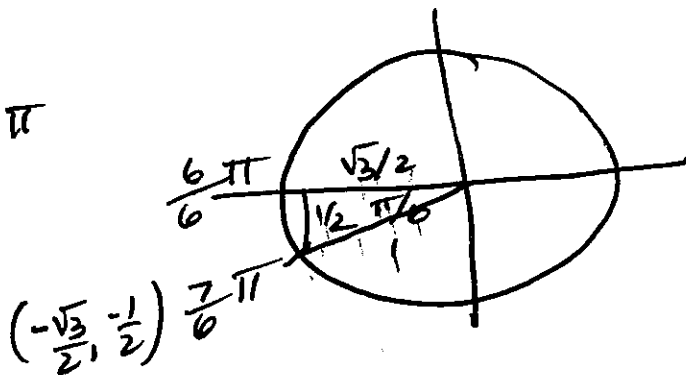
$= \frac{1}{2}$



④

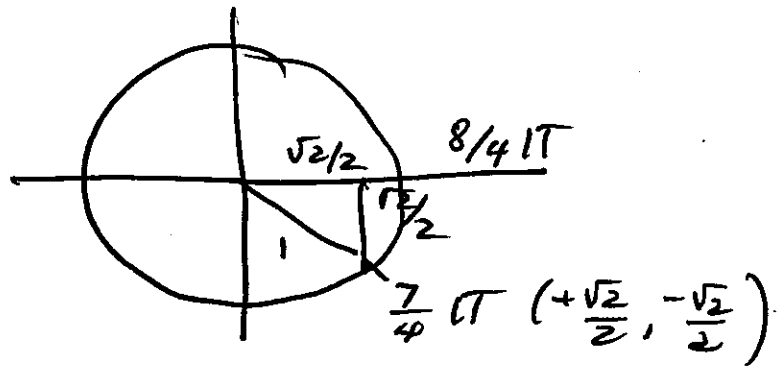
$\cos \frac{7\pi}{6}$

$= -\frac{\sqrt{3}}{2}$



⑤ $\sin \frac{7}{4}\pi$

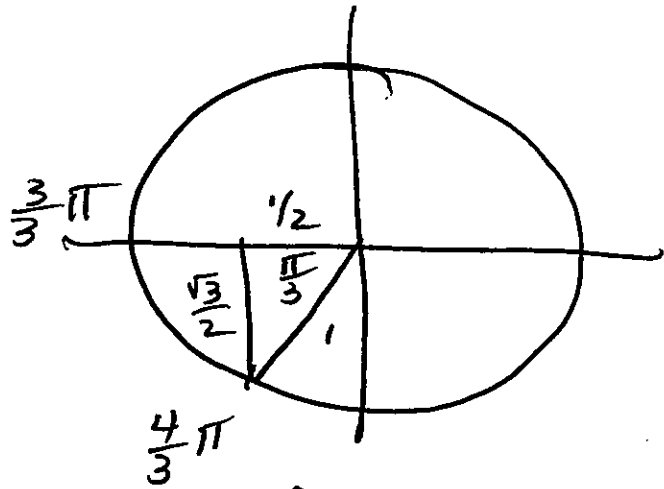
$= -\frac{\sqrt{2}}{2}$



⑥

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

$= -\frac{1}{2}$



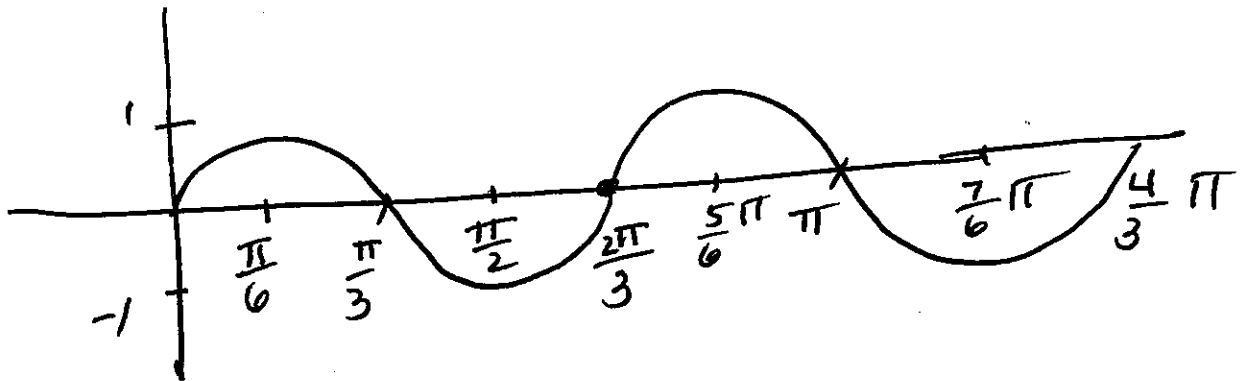
Sketch at least two cycles of the graph

$(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{3}}{2})$

⑦

$y = \sin 3x$

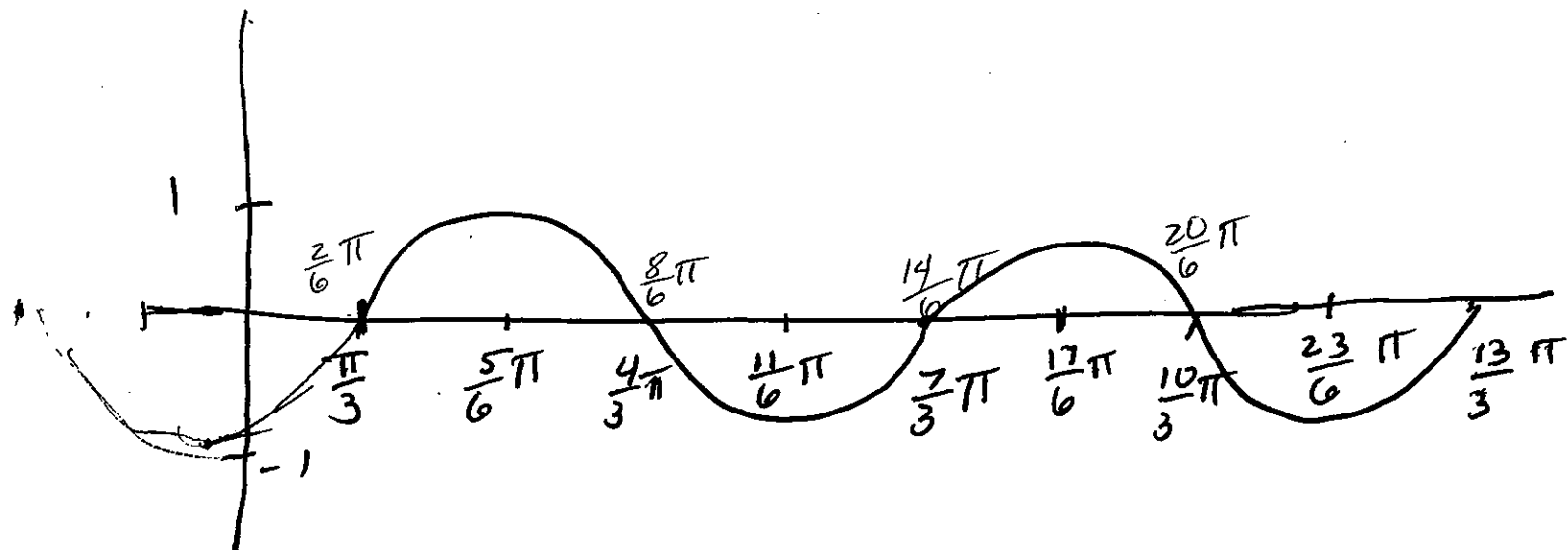
$P = \frac{2\pi}{3}, \quad Q\pi \text{ Per} = \frac{1}{4} \frac{2}{3} \pi = \frac{\pi}{6}$



$$\textcircled{8} \quad y = \sin\left(x - \frac{\pi}{3}\right)$$

$$P = 2\pi, \quad \text{Qtr Per} = \frac{2\pi}{4} = \frac{\pi}{2} = \frac{3}{6}\pi$$

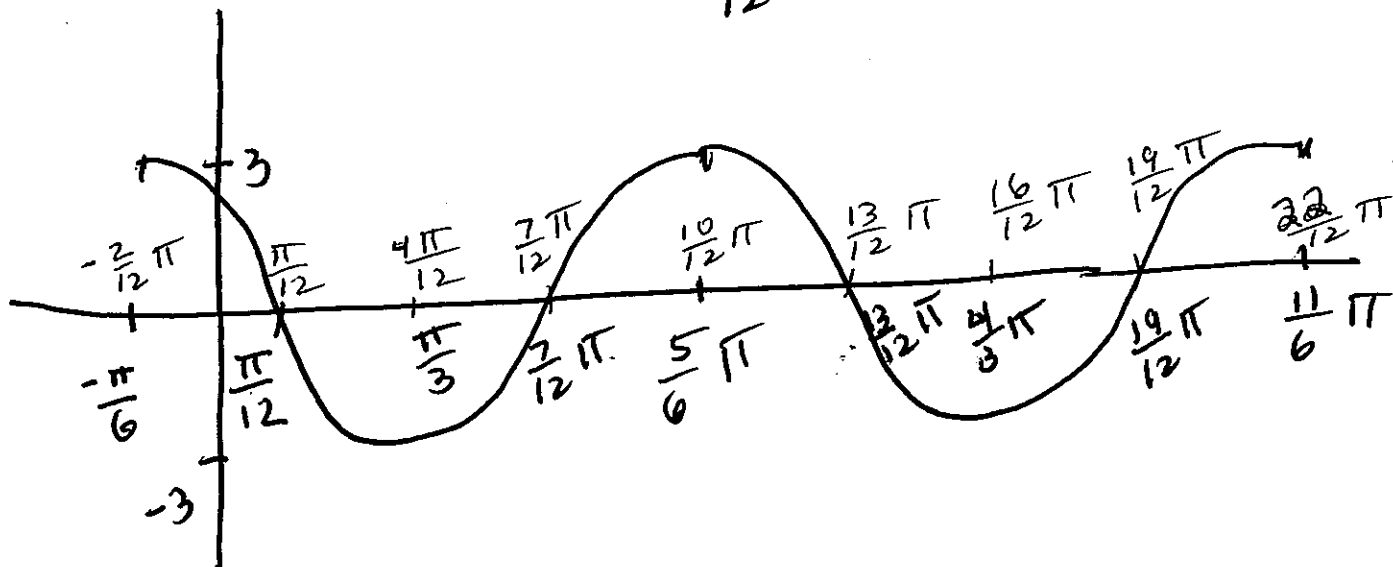
$$\text{Phase shift } \frac{\pi}{3} \text{ right} \\ = \frac{2}{6}\pi$$



$$\textcircled{9} \quad y = 3 \cos 2\left(x + \frac{\pi}{6}\right)$$

$$A = 3, \quad P = \frac{2\pi}{2} = \pi, \quad \text{Qtr Per} = \frac{\pi}{4} = \frac{3}{12}\pi$$

$$\text{Phase shift } \frac{\pi}{6} \text{ left} \\ = \frac{2}{12}\pi$$



Test Review

Buff #9 Rewrite as a single log

$$\textcircled{2} \log(x-2) - \textcircled{3} \log(x^2+1) - \textcircled{\frac{1}{2}} \log(x+3)$$

$$\log(x-2)^2 - \log(x^2+1)^3 - \log(x+3)^{1/2}$$

$$= \log\left(\frac{(x-2)^2}{(x^2+1)^3 \sqrt{x+3}}\right)$$

13 Solve

a) $5^{3x} = 29$

$$\ln 5^{3x} = \ln 29$$

$$3x \ln 5 = \ln 29$$

$$x = \frac{\ln 29}{3 \ln 5}$$

b) $e^{3x+1} = 2^x$

$$\ln e^{3x+1} = \ln 2^x$$

$$3x+1 = x \ln 2$$

$$3x - x \ln 2 = -1$$

$$x(3 - \ln 2) = -1$$

$$x = \frac{-1}{3 - \ln 2} \quad \text{or} \quad \frac{1}{-3 + \ln 2}$$

BC ¹⁷⁴⁷⁰

$$15 = 5e^{7x}$$

$$\frac{15}{5} = e^{7x}$$

$$3 = e^{7x}$$

$$\ln 3 = \ln e^{7x}$$

$$\ln 3 = 7x$$

$$x = \frac{\ln 3}{7}$$