MTH 151
Quiz 3
Fall 2018

Show all work in a neat and organized fashion. Clearly indicate your answers.
20 points possible.

Graphing calculator OK but not one with CAS (e.g., no TI-89, no TInspire).

1. (5 pts.) Evaluate the integral.

Do it "by hand," showing all work.

$$\int_{\pi/4}^{\pi} \sin\theta \, d\theta$$

2. (4 pts.) Find the derivative of the function.

$$h(x) = \int_{3}^{x^4} \cos(t^2) \, dt$$

3. (5 pts.) Evaluate the definite integral.

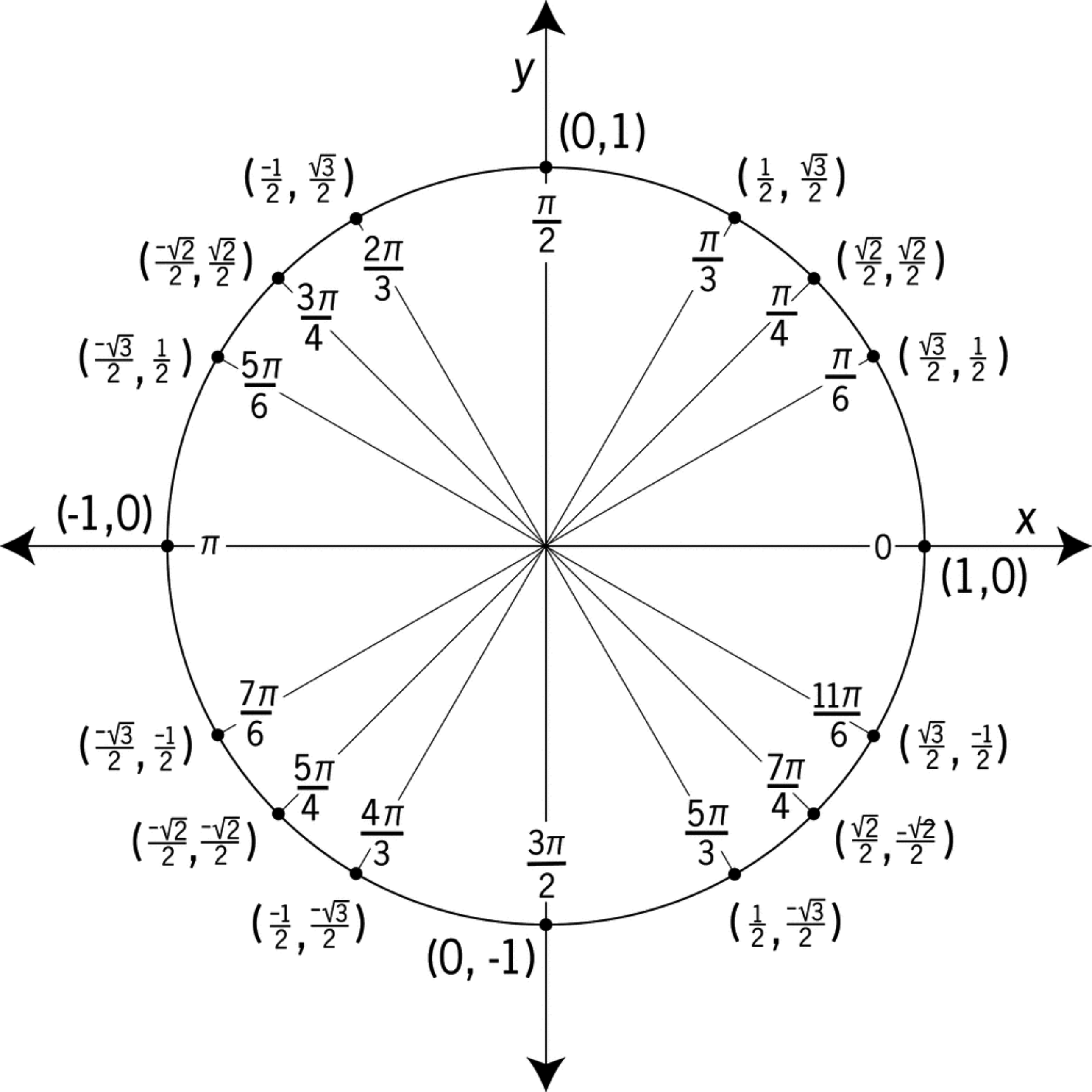
Do it "by hand," showing all work.

$$\int_0^{31} \frac{dx}{\sqrt[3]{(1+4x)^2}}$$

4. (6 pts.) Sketch the region enclosed by the given curves. Decide whether to integrate with respect to x or y. Draw a typical approximating rectangle and label its height and width. Then find the area of the region.

Evaluate your integral "by hand," showing all work.

$$y = (x-1)^2, \quad y = x + 1$$


y
x
(0,1)
$\left(\frac{-1}{2}, \frac{\sqrt{3}}{2}\right)$
$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$
$\frac{\pi}{2}$
$\left(\frac{-\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
$\frac{2\pi}{3}$
$\frac{\pi}{3}$
$\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
$\frac{3\pi}{4}$
$\frac{\pi}{4}$
$\left(\frac{-\sqrt{3}}{2}, \frac{1}{2}\right)$
$\frac{5\pi}{6}$
$\frac{\pi}{6}$
$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
(-1,0)
π
0
(1,0)
$\frac{7\pi}{6}$
$\frac{11\pi}{6}$
$\left(\frac{-\sqrt{3}}{2}, \frac{-1}{2}\right)$
$\left(\frac{\sqrt{3}}{2}, \frac{-1}{2}\right)$
$\frac{5\pi}{4}$
$\frac{7\pi}{4}$
$\left(\frac{-\sqrt{2}}{2}, \frac{-\sqrt{2}}{2}\right)$
$\frac{4\pi}{3}$
$\frac{5\pi}{3}$
$\left(\frac{\sqrt{2}}{2}, \frac{-\sqrt{2}}{2}\right)$
$\frac{3\pi}{2}$
$\left(\frac{-1}{2}, \frac{-\sqrt{3}}{2}\right)$
$\left(\frac{1}{2}, \frac{-\sqrt{3}}{2}\right)$
(0, -1)