Trigonometry Practice Exam 1

Kyle Broder – ANU – MSI – 2017

Question 1. Solve the following equation for $x \in [0, 2\pi]$.

$$\sin 2x = \sqrt{3} \cos 2x.$$

Question 2. Consider the function

$$f(x) = \frac{3}{2} \cos\left(\frac{1}{2}\pi - x\right) + 1.$$

a. State the transformations necessary to map $g(x) = \cos x$ to $f(x)$.
b. Sketch $f(x)$ on the domain $-\pi \leq x \leq \pi$.
c. State the transformations necessary to map $h(x) = \sin x$ to $f(x)$.

Question 3. Solve the following equation for $0 \leq x \leq 2\pi$.

$$\sin^2 x + 2 \sin x = \frac{5}{4}.$$

Note that you will obtain two solutions for x, solve only the equation that permits you to find an exact value. In other words, do not attempt to solve an equation such as $\sin x = \frac{1}{3}$.