7. (10 pts.) On the axes provided below, sketch at least two full periods of the graph of the trigonometric function

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

Be sure to indicate the choice of units on each axis.

\[ \text{Amplitude} = \underline{\phantom{0}} \quad \text{Period} = \underline{\phantom{0}} \]

(b) What are the amplitude and period of \( f \)?

(c) Find a formula for the function \( g \) whose graph is obtained by shifting the graph of \( f \) down by two units and to the right by two units.

\[ g(x) = \underline{\phantom{0}} \]

(d) Find a formula for the trigonometric function, \( k \), whose graph has all of the following features

- the same midline and amplitude as \( f \),
- twice as many peaks and valleys as \( f \), and
- at least one of its peaks coincides with a peak of \( f \).

\[ k(x) = \underline{\phantom{0}} \]