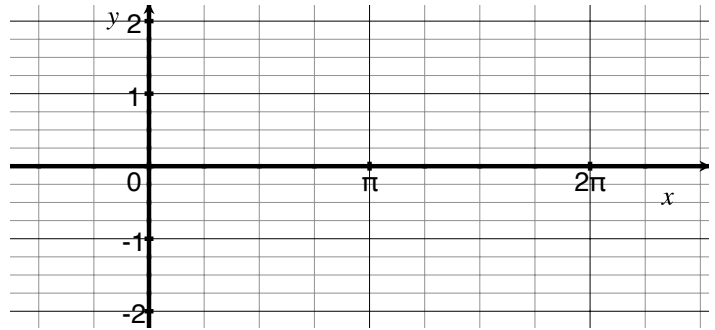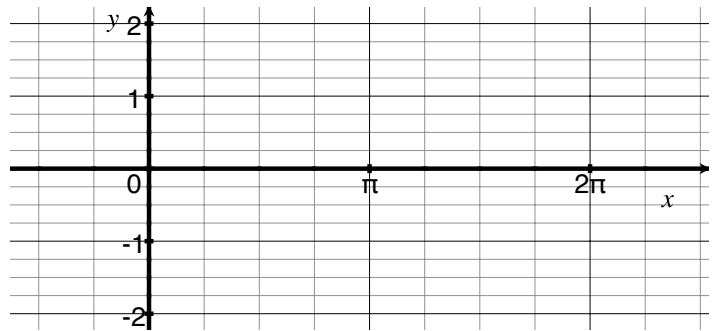# TMATH 124: Quiz 3

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work. No calculators or notes are allowed.

1. Consider the graph of $f(x) = \sin(2x)$.

   (a) [1] Carefully, draw the graph of $f(x)$ on the axis provided.

   (b) [1] Sketch the graph of $\dfrac{df}{dx}$ on the axis below.

   (c) [2] (WebHW9 #7) Find $f'(x)$

   (d) [2] (Trig Wks #2)
   Find $\lim\limits_{x \to 0} \dfrac{f(x)}{6x}$

2. (§3.2 #44) Given that $f(2) = -3$, $f'(2) = -2$, $g(2) = 4$, and $g'(2) = 7$, find the following:

(a) [2] $\dfrac{d}{dx} \left(\dfrac{1 + f(x)}{g(x)} \right) \Big|_{x=2}$

(b) [2] Find the equation of the line tangent to g when $x = 2$