

# TMATH 124am: Quiz 2

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

1. (§2.7 #4) Let  $f(x) = x - x^3$

(a) [2] Find the slope of the line tangent to the graph of  $f$  when  $x = 2$ .

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

2. [2] (WebHW4 #11) Let  $g(x) = \frac{x-8}{x^2+5}$ . Find  $\lim_{x \rightarrow -\infty} g(x)$ .

3. [4] (Con't Wks #6) Sketch a graph of a function  $\alpha$  that satisfies *all* of the following:

$$\lim_{x \rightarrow 2^+} \alpha(x) = 0$$

$$\lim_{x \rightarrow -2} \alpha(x) = -\infty$$

$$\alpha(2) = 3$$

$\alpha$  is discontinuous  
when  $x = 4$

$$\lim_{x \rightarrow -\infty} \alpha(x) = 1$$

