TMATH 124pm: 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 $x = 3$.

   (b) [2] Find the equation of the line tangent to the graph of f when $x = 3$.

2. [2] (WebHW4 #11) Let $g(x) = \dfrac{x+4}{x^2-5}$. Find $\lim\limits_{x \to -\infty} g(x)$.

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

$\lim\limits_{x \to 2^+} \alpha(x) = 0$

$\lim\limits_{x \to -1} \alpha(x) = -\infty$

$\alpha(2) = 3$

α is discontinuous
when $x = 4$

$\lim\limits_{x \to -\infty} \alpha(x) = 1$