4. (30) Differentiate the following functions. You need not simplify.

(a) \(f(x) = \frac{1}{\sqrt[3]{x}} - x^3\)

(b) \(g(t) = \frac{t}{(t^2 - 7)^8}\)

(c) \(F(x) = e^{2x} \sin^5 x\)

(d) \(h(\theta) = \cos(\tan \theta)\)

(e) \(G(x) = \ln(8x - 6\sqrt{x})\)

5. (10) For each of the following, either find the given value or state that it does not exist.

(a) \(\lim_{{x \to -2}} f(x) = \) ________

(b) \(\lim_{{x \to 0}} f(x) = \) ________

(c) \(f(1) = \) ________

(d) True or False: \(f(x)\) is continuous at \(x = -1\).

(e) True or False: \(f(x)\) is differentiable at \(x = -1\).