Rutgers University
Math 151

Section 4.1: Extreme Values - Worksheet

1. Find the absolute extrema of the following functions on the given interval.

   (a) $f(x) = 2x^3 + 3x^2 - 12x + 1$ on $[-1, 2]$.

   (b) $f(x) = x(7 - x)^{2/5}$ on $[1, 6]$.

   (c) $f(x) = 3x^4 - 10x^3 + 6x^2 - 7$ on $[-2, 1]$.

   (d) $f(x) = (e^x - 2)^{4/7}$ on $[0, \ln(3)]$.

   (e) $f(x) = \dfrac{\ln(x)}{\sqrt{x}}$ on $[1, e^4]$.

   (f) [**Advanced**] $f(x) = 2\arctan(3x) - 3x$ on $\left[0, \frac{1}{\sqrt{3}}\right]$. (*Hint: use the approximations $\pi \simeq 3.1$ and $\sqrt{3} \simeq 1.7$).*)