

Lesson 20 Worksheet

October 16, 2017

Find the critical point of the given function on the given interval, then find the absolute extrema on the interval (if they exist).

1. $f(x) = \frac{\ln x}{3x}$ on $[2, 3]$
2. $g(x) = \frac{x}{x^2+1}$ on $(0, 4]$
3. $y = x^{4/3} + 16x^{1/3} + 1$ on $[-1, 1]$
4. $y = 3x^2 - 24x$ on $[-3, 5)$

Answers:

1. Critical point: $x = 3$; absolute max $(3, \frac{1}{3e})$; absolute min $(2, \frac{\ln 2}{6})$
2. Critical point: $x = 1$; absolute max $(1, 1/2)$; no absolute min
3. Critical point: $x = 0$; absolute max $(1, 18)$; absolute min $(-1, -14)$
4. Critical point: $x = 4$; absolute min $(4, -48)$