Quiz 7 Sections 4.1, 4.2, 4.3 Name: Solution

(1) Find the absolute maximum and the absolute minimum of the following function on the following closed, bounded interval:

$f(x) = 10 + 6x - x^2$ on $[-4, 4]$

$f'(x) = 6 - 2x$

$0 = 6 - 2x$

$6 = 2x$

$3 = x$ is a critical number

$f(-4) = 10 - 24 - 16 = -30$] Minimum

$f(4) = 10 + 24 - 16 = 18$

$f(3) = 10 + 18 - 9 = 19$] maximum

(2) Sketch the graph of a function with the following properties:

$f'(x) > 0$ when $x < 1$

$f'(x) < 0$ when $x > 1$

$f''(x) > 0$ when $x < 1$

$f''(x) < 0$ when $x > 1$

(Make up a function and draw it; just make sure it satisfies the statements on the left)

(There are many right answers)