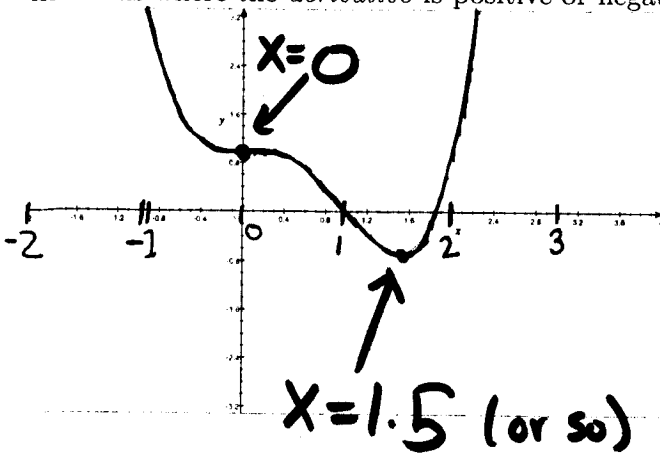


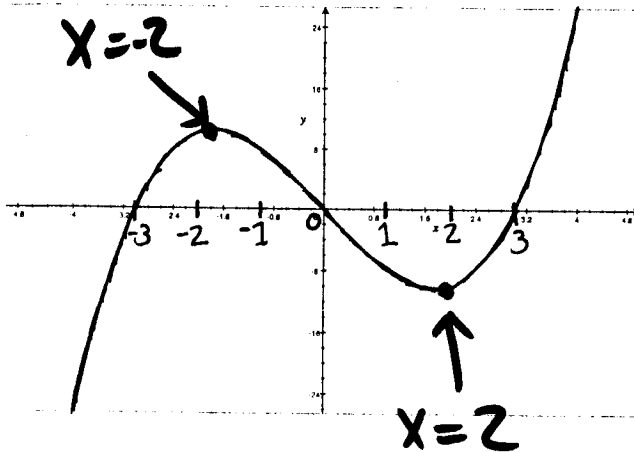
Math 16-A: Quiz #6

Name:

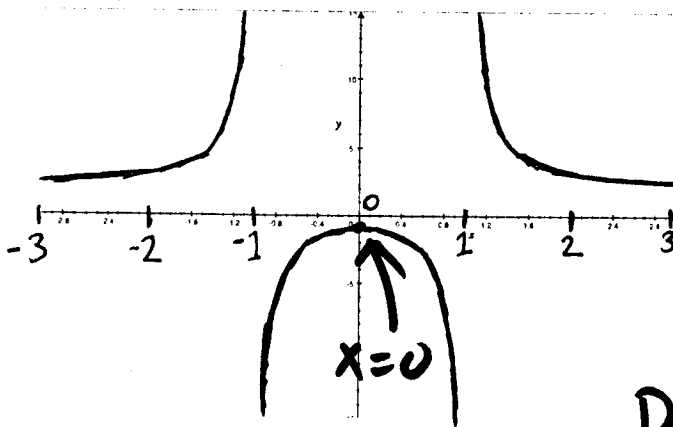
1. Below are three graphs of functions. For each graph, find the critical numbers, and the intervals where the *derivative* is positive or negative.



Crit #'s: $x=0, 1.5$
 Increasing: $(1.5, \infty)$
 Decreasing: $(-\infty, 1.5)$



Crit #'s: $x=\pm 2$
 Increasing: $(-\infty, 2), (2, \infty)$
 Decreasing: $(-2, 2)$



Asymptotes at $x=\pm 1$ - where f' is not defined.

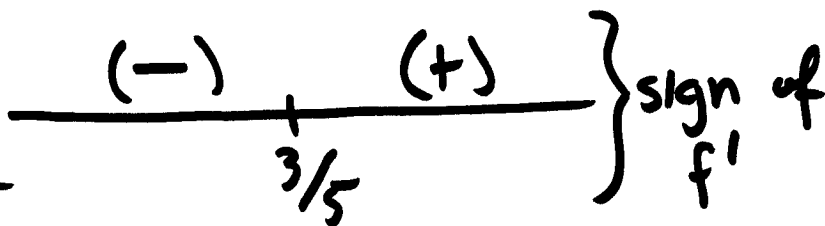
Crit #'s: $x=-1, 0, 1$.
 Increasing: $(-\infty, -1), (-1, 0)$
 Decreasing: $(0, 1), (1, \infty)$

2. Find the intervals on which the function is increasing and/or decreasing. For each critical number, identify if it is a relative maximum, minimum, or neither.

(a) $f(x) = \frac{5}{2}x^2 - 3x + \frac{1}{2}$.

Find crit #'s:

$f'(x) = 5x - 3$



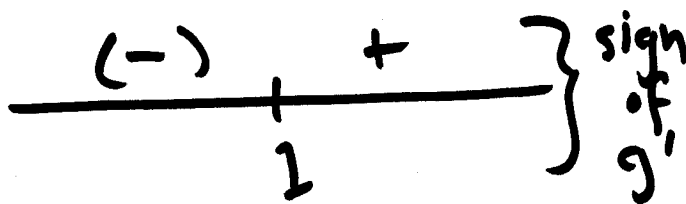
Crit # at $x = \frac{3}{5}$.

$x = \frac{3}{5}$ is a relative minimum.

(b) $g(t) = (t - 1)^{2/3}$

$g'(t) = \frac{2}{3}(t - 1)^{-1/3}$.

g' not defined at $t = 1$.



Crit # at $t = 1$
 $t = 1$ is rel. minimum

(c) $h(w) = w^3 + 3w + 1$

$h'(w) = 3w^2 + 3$

$= 3(w^2 + 1)$

Since $3(w^2 + 1) \geq 3$, there are no critical #'s and $h' > 0$ everywhere.

So h is increasing on $(-\infty, \infty)$