- **Reminder:** Test 2 is today! Please read the vocabulary list posted on the course website before the test.
- Problem Set B is on the website now. (It's probably too late to start thinking about these problems now...)
- Today's lecture will assume you have watched all the videos on playlist 6.

For next Tuesday's lecture, you don't have to watch anything new!

Problem 1. Can you construct a function *f* such that...?

- the domain of f is at least $(0,\infty)$
- f is continuous and concave up on its domain

•
$$\lim_{x\to\infty} f(x) = -\infty$$

Problem 2. Can you construct a function g such that...?

- the domain of g is $\mathbb R$
- g is continuous
- g has a local minimum x = 0
- g has an inflection point at x = 0

Let
$$h(x) = \frac{x^{2/3}}{(x-1)^{2/3}}$$
.

Its first two derviatives are:

$$h'(x) = rac{-2}{3x^{1/3}(x-1)^{5/3}}$$
 $h''(x) = rac{2(6x-1)}{9x^{4/3}(x-1)^{8/3}}$

- **1** Find all asymptotes of *h*.
- **2** Study the monotonicity of h, and find any local extrema.
- 3 Study the concavity of h, and find any inflection points.
- 4 With this (and only this) information, sketch the graph of h.