

Show all work.

1. (10 points) Calculate the following limits.

(a)  $\lim_{x \rightarrow \infty} \frac{\ln x}{\sqrt[3]{x}}$ .

(b)  $\lim_{\theta \rightarrow 0} \frac{\theta^2}{1 - \cos \theta}$ .

(c)  $\lim_{t \rightarrow 0} \frac{e^t}{t^2 - 3t + 2}$ .

2. (10 points) You wish to fence a rectangular pasturing area which will be subdivided into five narrower rectangles by four fences parallel to one pair of sides. You have 2400 feet of fencing to use for your whole project. What dimensions for your pasture will maximize its area?