

1.

$$F(x) = x\sqrt{6-x}$$

- (a) What is the domain of  $F(x)$ ?
- (b) Find the intervals of increase or decrease.
- (c) Find the intervals of concavity and the inflection points.
- (d) Sketch the graph.

2. Compute the following limits; you may use L'Hopital's rule:

$$\lim_{x \rightarrow -\infty} \frac{e^x}{1 - e^x} =$$

$$\lim_{x \rightarrow +\infty} \frac{e^x}{1 - e^x} =$$

(Can you compute the second limit without L'Hopital's rule? How?)

3.

$$g(x) = \frac{e^x}{1 - e^x}$$

- (a) What is the domain of  $g(x)$ ?
- (b) Find the horizontal and vertical asymptotes.
- (c) Find the intervals of increase or decrease.
- (d) Find the intervals of concavity and the inflection points.
- (e) Sketch the graph.