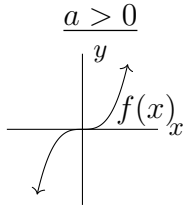
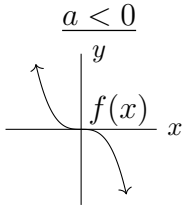
Cubic Functions & Models

Cubic Models



- $\lim_{x\to\infty} f(x) =$
- $\lim_{x\to-\infty} f(x) =$
- f is increasing, decreasing, then increasing
- f is concave down then up



- $\lim_{x\to\infty} f(x) =$
- $\lim_{x\to-\infty} f(x) =$
- f is decreasing, increasing, then decreasing
- f is concave up then down

Examples

Example 1.10.1. A car company's profit on SUV's is given below.

SUV's sold (in millions)	10	20	30	40	50	60	70
Profit (in trillion dollars)	0.9	3.1	4.3	5.2	5.8	6.4	6.9

(a) Use the scatterplot to determine the best model for the data. Give two reasons for your choice.

(b) Write the complete model.

(c) Find the profit when 37 million SUV's are sold. Write a sentence of interpretation for your answer.

Example 1.10.2. A manufacturing company recorded the production of toys when a certain amount of capital is invested in the production run.

Capital Invested (in million dollars)	6	18	24	30	42	48
Units Produced (in billions)	19	38	42	45	60	77

(a) Use the scatterplot to determine the best model for the data. Give two reasons for your choice.

(b) Write the complete model.

(c) Find the capital needed to produce 50 billion units. Write a sentence interpreting your answer.