Find the local and absolute extreme values of the function on the given interval.

$f(x) = x^3 - 6x^2 + 9x + 2, \quad [2,4]$

Find all the critical numbers of the function.

$g(\theta) = 2\cos\theta + \sin^2\theta$

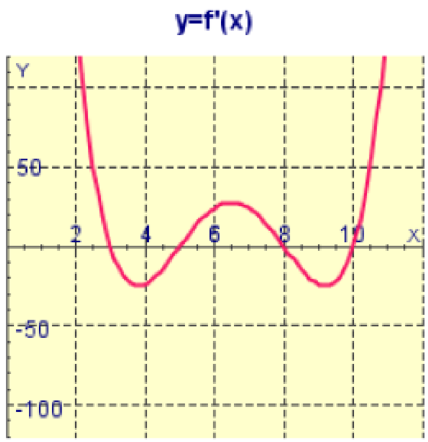
Find the maximum and minimum points of the function.

$$F(x) = \left(1+x^2\right)^3 + 6x^4$$

Find the maximum and minimum points of the function.

$$F(x) = \frac{2x}{1+4x^2}$$

The graph of the first derivative $f'(x)$ of a function f is shown below. At what values of x does f have a local maximum or minimum?



Estimate the extreme values of the function. Round the answers to the nearest hundredth.

$$y(x) = \frac{1}{3}x^3 - 7x^2 + 40x + 15$$

. Given $f(x) = \frac{10x}{x^2 + 36}$.

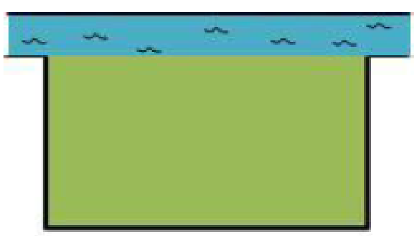
(a) Find the intervals on which f is increasing or decreasing.

(b) Find the relative maxima and relative minima of f.

Determine where the graph of the function $f(x) = \sin 9x$ is concave upward and where it is concave downward on the interval $0 \le x \le \frac{2\pi}{9}$. Also, find all inflection points of the function.

Sketch the graph of the function $y = \cos^2 8x$ on $0 \le x \le \frac{\pi}{4}$

The owner of a ranch has 1,800 yd of fencing with which to enclose a rectangular piece of grazing land situated along a straight portion of a river. If fencing is not required along the river, what are the dimensions of the largest area he can enclose? What is the area?



A baseball team plays in a stadium that holds 56,000 spectators. With ticket prices at $9, the average attendance had been 32,000. When ticket prices were lowered to $8, the average attendance rose to 36,000. How should ticket prices be set to maximize revenue? Assume the demand function is linear.