

- Find all absolute extrema of  $y = x + \sin x$  on  $[0, 2\pi]$   
 $\boxed{\text{minimum } (0,0) \quad \text{maximum } (2\pi, 2\pi)}$
- Find all absolute extrema of  $y = \frac{-x^3 + x^2 + 3x + 1}{x+1}$  on  $(-1, 2]$ .  
 $\boxed{(1, 2) \text{ maximum}}$
- Let  $f(x) = 7 - \frac{6}{x}$ . Find all  $c$  in  $(1, 6)$  such that  $f'(c) = \frac{f(b) - f(a)}{b - a}$   
 $\boxed{c = \sqrt{6}}$
- Determine whether Rolle's theorem applies to  $f(x) = \frac{1}{(x-3)^2}$  on  $[2, 4]$ .  
 Explain why or why not.  $\boxed{\text{No, not continuous at } x=3}$
- Determine whether the Mean Value Theorem applies to  $f(x) = \frac{(x^2+2)(2x-1)}{2x-1}$  on  $[-1, 3]$ . Explain why or why not.  
 $\boxed{\text{No, not continuous at } x=1/2}$
- Find all intervals on which  $f(x) = \frac{x}{x^2+x-2}$  is increasing or decreasing.  
 $y' = \frac{-x^2-2}{(x^2+x-2)^2}$   
 $\boxed{\text{decreasing } (-\infty, -2) \cup (-2, 1) \cup (1, \infty)}$
- Find all relative extrema of  $f(x) = x^3 + x$ .  
 $x^2 = -\frac{1}{3}$   
 $\boxed{\text{no relative extrema}}$
- Find all points of inflection of the graph of  $f(x) = 2x(x-4)^3$ .  
 $\boxed{(4, 0) \quad (2, -32)}$
- Find all intervals on which  $f(x) = \frac{x-1}{x+3}$  is concave down.  
 $\boxed{(-3, \infty)}$

10. Analyze the curves. Use the information to sketch a graph of the curve

