

**Calculus HW 312**

Name \_\_\_\_\_ Pd \_\_\_\_\_

Locate the absolute extrema of the function on the closed interval.

17.  $f(x) = 2(3 - x)$ ,  $[-1, 2]$

19.  $f(x) = -x^2 + 3x$ ,  $[0, 3]$

21.  $f(x) = x^3 - \frac{3}{2}x^2$ ,  $[-1, 2]$

23.  $y = 3x^{2/3} - 2x$ ,  $[-1, 1]$

25.  $g(t) = \frac{t^2}{t^2 + 3}$ ,  $[-1, 1]$

18.  $f(x) = \frac{2x + 5}{3}$ ,  $[0, 5]$

20.  $f(x) = x^2 + 2x - 4$ ,  $[-1, 1]$

22.  $f(x) = x^3 - 12x$ ,  $[0, 4]$

24.  $g(x) = \sqrt[3]{x}$ ,  $[-1, 1]$

26.  $y = 3 - |t - 3|$ ,  $[-1, 5]$

Graph a function on  $[-2, 5]$  having the given characteristics.49. Absolute maximum at  $x = -2$ Absolute minimum at  $x = 1$ Relative maximum at  $x = 3$ 50. Relative minimum at  $x = -1$ Critical number at  $x = 0$ , but no extremaAbsolute maximum at  $x = 2$ Absolute minimum at  $x = 5$

Q3

t (hours)	0	2	5	7	8	10
v(t) (miles per hour)	50	55	60	70	65	75

The table above gives the velocity  $v(t)$  at selected times  $t$  of a car traveling along a straight road. Use the values of the table to approximate the acceleration of the car at time  $t = 6$ . Show your work and indicate the units of measure.

Q6 An object moves along the x-axis starting off from the initial position  $x(0) = 3$ . The velocity of the object at time  $t$  is given by  $v(t) = 4 - t^2$ .

- a. Find the acceleration of the object at time  $t=3$ .
  
  
  
  
  
  
  
  
  
  
- b. Is the object's velocity increasing or decreasing at  $t = 3$ ?
  
  
  
  
  
  
  
  
  
  
- c. Is the object's velocity increasing or decreasing at  $t = 3$ ?
  
  
  
  
  
  
  
  
  
  
- d. At what time  $t$ ,  $0 \leq t \leq 3$ , does the object change its direction?