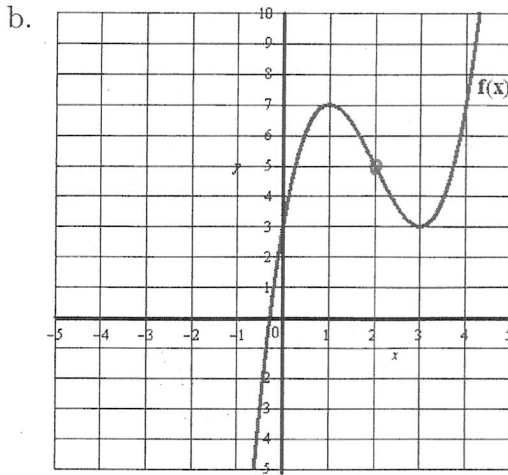
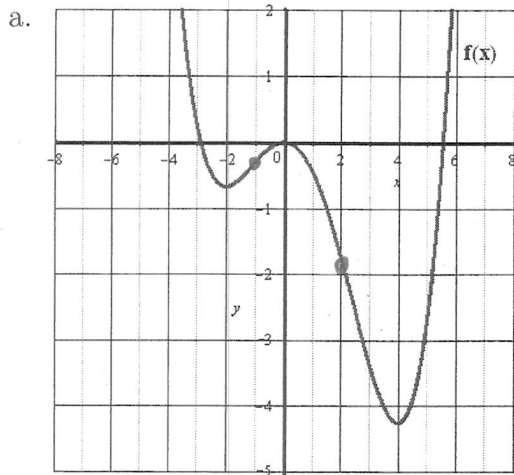


29. Using the graph, determine the intervals over which  $f(x)$  is increasing, decreasing, concave up, and concave down. Give your answers in interval notation.



Increasing  $(-2, 0) \cup (4, \infty)$     Concave up  $(-\infty, -1) \cup (2, \infty)$     Increasing  $(-\infty, 1) \cup (3, \infty)$     Concave up  $(2, \infty)$   
 Decreasing  $(-\infty, -2) \cup (0, 4)$     Concave Down  $(-1, 2)$     Decreasing  $(1, 3)$     Concave down  $(-\infty, 2)$

30. In each of the following cases, find the relative change. Give your answer as a percentage.

a. B changes from 40 to 60.

$$\frac{60-40}{40} = 0.5 \quad 50\% \text{ Increase}$$

b. F changes from 35 to 21.

$$\frac{21-35}{35} = -0.40 \quad 40\% \text{ Decrease}$$

31. Determine whether each of the following is a power function. For all power functions, give the values of  $k$  and  $p$ .

a.  $y = \frac{2}{5x^7}$

yes  $y = \frac{2}{5}x^{-7}$      $k = \frac{2}{5}$      $p = -7$

d.  $y = 2(3^x)$

NO

b.  $y = 7\sqrt{x}$

yes  $y = 7x^{1/2}$      $k = 7$      $p = 1/2$

e.  $y = 4(2x^5)^3$

yes  $y = 4 \cdot 8x^{15}$      $k = 32$      $p = 15$   
 $y = 32x^{15}$

c.  $y = 3x^8$

yes  $k = 3$      $p = 8$

f.  $y = \frac{5}{\sqrt{x}}$

yes  $y = 5x^{-1/2}$      $k = 5$      $p = -1/2$