

# Worksheet 6

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46. Use a graphing calculator or a computer to graph  $y = x^4$  and  $y = 3^x$ . Determine approximate domains and ranges that give each of the graphs in Figure 1.77.

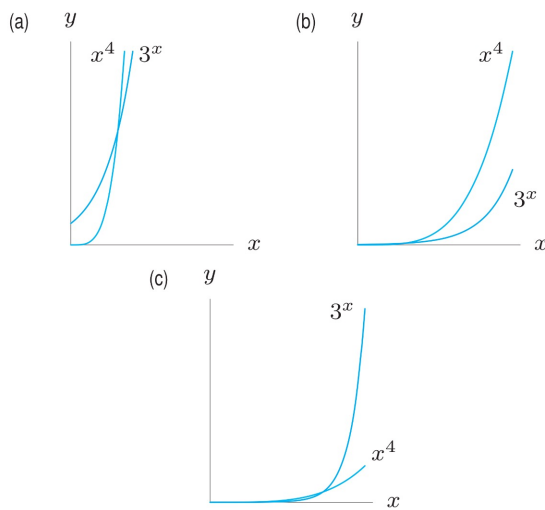


Figure 1.77

17. Each of the graphs in Figure 1.74 is of a polynomial. The windows are large enough to show end behavior.

- (a) What is the minimum possible degree of the polynomial?  
(b) Is the leading coefficient of the polynomial positive or negative?

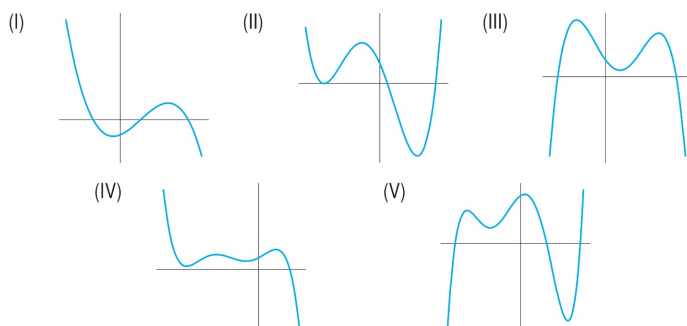


Figure 1.74

44. Which of the functions I–III meet each of the following descriptions? There may be more than one function for each description, or none at all.

- (a) Horizontal asymptote of  $y = 1$ .
- (b) The  $x$ -axis is a horizontal asymptote.

- (c) Symmetric about the  $y$ -axis.
- (d) An odd function.
- (e) Vertical asymptotes at  $x = \pm 1$ .

I.  $y = \frac{x-1}{x^2+1}$     II.  $y = \frac{x^2-1}{x^2+1}$     III.  $y = \frac{x^2+1}{x^2-1}$

39. The height of an object above the ground at time  $t$  is given by

$$s = v_0t - \frac{g}{2}t^2,$$

where  $v_0$  is the initial velocity and  $g$  is the acceleration due to gravity.

- (a) At what height is the object initially?
- (b) How long is the object in the air before it hits the ground?
- (c) When will the object reach its maximum height?
- (d) What is that maximum height?

45. Values of three functions are given in Table 1.19, rounded to two decimal places. One function is of the form  $y = ab^t$ , one is of the form  $y = ct^2$ , and one is of the form  $y = kt^3$ . Which function is which?

Table 1.19

| $t$ | $f(t)$ | $t$ | $g(t)$ | $t$ | $h(t)$ |
|-----|--------|-----|--------|-----|--------|
| 2.0 | 4.40   | 1.0 | 3.00   | 0.0 | 2.04   |
| 2.2 | 5.32   | 1.2 | 5.18   | 1.0 | 3.06   |
| 2.4 | 6.34   | 1.4 | 8.23   | 2.0 | 4.59   |
| 2.6 | 7.44   | 1.6 | 12.29  | 3.0 | 6.89   |
| 2.8 | 8.62   | 1.8 | 17.50  | 4.0 | 10.33  |
| 3.0 | 9.90   | 2.0 | 24.00  | 5.0 | 15.49  |