

In this section, you need to know how to write expressions involving powers.  
Complete the boxes:

(1) 1. The expression  $13\sqrt[3]{x}$  can be written as  $13x^{\square}$

(2) 2. The expression  $\sqrt{\frac{25}{x^3}}$  can be written as  $\square x^{\square}$

(2) 3. The expression  $(5x)^2$  can be written as  $\square x^{\square}$

(2) 4. The expression  $\frac{x^{20}}{4x^{-5}}$  can be written as  $\square x^{\square}$

(6) 5. Match the power function family with its general shape

\_\_\_  $y = x^3, x^5, x^7, \dots$

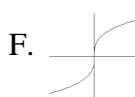
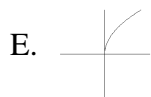
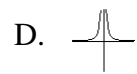
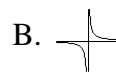
\_\_\_  $y = x^{-3}, x^{-5}, x^{-7}, \dots$

\_\_\_  $y = x^2, x^4, x^6, \dots$

\_\_\_  $y = x^{-2}, x^{-4}, x^{-6}, \dots$

\_\_\_  $y = x^{1/3}, x^{1/5}, x^{1/7}, \dots$

\_\_\_  $y = x^{1/2}, x^{1/4}, x^{1/6}, \dots$



(1) 6. The text chose to explore the shape of power functions of the form  $y = kx^p$  with  $k = 1$ .

What do all of these shapes have in common?

- All of the graphs of  $y = x^p$  have domain all real numbers
- All of the graphs of  $y = x^p$  have range all real numbers
- All of the graphs of  $y = x^p$  have the same y-intercept.
- All of the graphs of  $y = x^p$  pass through the point (1, 1).
- All of the graphs of  $y = x^p$  pass through the origin

(2) 7. Which have both horizontal and vertical asymptotes? SELECT ALL that apply.

- $y = x^3, x^5, x^7, \dots$
- $y = x^{-3}, x^{-5}, x^{-7}, \dots$
- $y = x^2, x^4, x^6, \dots$
- $y = x^{-2}, x^{-4}, x^{-6}, \dots$
- $y = x^{1/3}, x^{1/5}, x^{1/7}, \dots$
- $y = x^{1/2}, x^{1/4}, x^{1/6}, \dots$

(1) 8. What great scientist is mentioned in the reading of Section 9.1?

- Euler
- Pythagoras
- Torricelli
- Malthus