

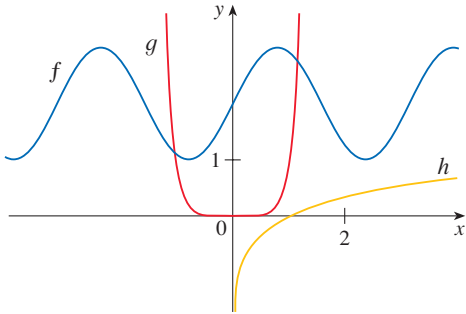
## 1.2 Mathematical Models: A Catalog of Essential Functions

**A** [Click here for answers.](#)

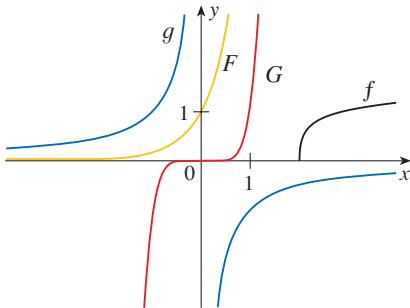
**S** [Click here for solutions.](#)

**1–2** ||| Match each equation with its graph. Explain your choices. (Don't use a computer or graphing calculator.)

1. (a)  $y = x^8$       (b)  $y = \log_8 x$       (c)  $y = 2 + \sin 2x$



2. (a)  $y = x^7$       (b)  $y = 7^x$   
 (c)  $y = -1/x$       (d)  $y = \sqrt[4]{x-2}$



## Answers

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**E** [Click here for exercises.](#)

**S** [Click here for solutions.](#)

1. (a)  $g$  (b)  $h$  (c)  $f$
2. (a)  $G$  (b)  $F$  (c)  $g$  (d)  $f$

 Solutions

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[E Click here for exercises.](#)[A Click here for answers.](#)

1. (a) The graph of  $y = x^8$  must be the graph labelled  $g$ , because  $g$  is the graph of a power function of even degree, as shown in Figure 12.
  - (b) The graph of  $y = \log_8 x$  must be the graph labelled  $h$ , because  $h$  is a graph similar to the graphs of logarithmic functions shown in Figure 21.
  - (c) The graph of  $y = 2 + \sin 2x$  must be the graph labelled  $f$ , because  $f$  is the graph of a periodic function.
2. (a) The graph of  $y = x^7$  must be the graph labelled  $G$ , because  $G$  passes through the origin.
  - (b) The graph of  $y = 7^x$  must be the graph labelled  $F$ , because  $F$  appears to be an exponential function with  $y$ -intercept 1, increasing, and horizontal asymptote  $y = 0$ .
  - (c) The graph of  $y = -1/x$  must be the graph labelled  $g$ , because  $g$  has a vertical asymptote at  $x = 0$ .
  - (d) The graph of  $y = \sqrt[3]{x-2}$  must be the graph labelled  $f$ , because  $f$  has domain  $[2, \infty)$ .