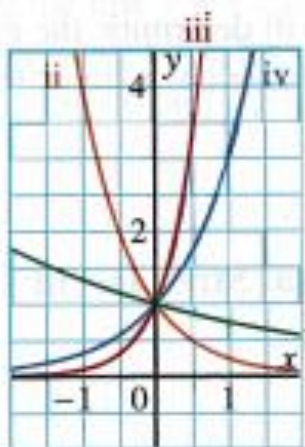


## 1. Identify which graph best represents each function.

- a)  $f(x) = 3^x$   
 b)  $g(x) = 10^x$   
 c)  $h(x) = \left(\frac{3}{4}\right)^x$   
 d)  $k(x) = \left(\frac{1}{4}\right)^x$

2. a) Graph  $y = 10^x$  and  $y = 2^x$  on the same axes.b) Use your graph in part a to sketch the graph of  $y = 5^x$ .

c) Use a graphing calculator to confirm your sketch in part b.

5. a) Suppose  $a > 0$ . Visualize what the graph of  $y = a^x$  looks like as  $a$  becomes larger and larger, and as  $a$  becomes smaller and smaller.

b) Predict what the graphs of the equations in each list would look like.

i)  $y = 2^x, y = 3^x, y = 4^x, \dots, y = 100^x$

ii)  $y = \left(\frac{1}{2}\right)^x, y = \left(\frac{1}{3}\right)^x, y = \left(\frac{1}{4}\right)^x, \dots, y = \left(\frac{1}{100}\right)^x$

c) Use a graphing calculator to check your predictions in part b.

## 6. For each list, predict what the graphs of the equations would look like.

Check your predictions.

a)  $y = 1 \times 2^x$   
 $y = 2 \times 2^x$   
 $y = 4 \times 2^x$   
 $y = 8 \times 2^x$   
 $\vdots$   
 $y = 2^{10} \times 2^x$

b)  $y = 1 \times 2^x$   
 $y = \frac{1}{2} \times 2^x$   
 $y = \frac{1}{4} \times 2^x$   
 $y = \frac{1}{8} \times 2^x$   
 $\vdots$   
 $y = \frac{1}{2^{10}} \times 2^x$

11. a)  $5^{1.43t}$   
 b)  $10^x = 5^{1.431x}, 2^x = 5^{0.693x}$   
 14. a)  $y = 2^x$  b)  $y = 2^{-x}$

10. a)  $10^{0.301t}$

b) About 0.301; explanations may vary.

c) 3.32

9. a)  $55^\circ\text{C}$   
 b)  $55^\circ\text{C}$   
 c)  $55^\circ\text{C}$   
 d)  $55^\circ\text{C}$

e) The graph of  $T = 79 \times 0.85^t + 20$  is the image of  $y = 0.85^x$  after a vertical expansion by a factor of 79 and a vertical translation 20 units up.

## 7.6 Exercises, page 370

1. a) iv b) iii c) i d) ii

2. a)  $55^\circ\text{C}$  b)  $55^\circ\text{C}$  c)  $55^\circ\text{C}$  d)  $55^\circ\text{C}$

e) The graph of  $T = 79 \times 0.85^t + 20$  is the image of  $y = 0.85^x$  after a vertical expansion by a factor of 79 and a vertical translation 20 units up.

12. a) Graph the function  $y = 3^x$ .

b) Describe how the graph in part a will change for each function below.

Use a graphing calculator to confirm your description.

i)  $y = 2(3)^x$

ii)  $y = 0.5(3)^x$

iii)  $y = -3^x$

iv)  $y = 3^x + 2$

v)  $y = 3^x - 1$

vi)  $y = 2(3)^x + 1$

c) Describe the graphical implications of changes in the parameters  $a$  and  $c$  in the equation  $y = a(3)^x + c$