

 $\gamma$  shifting figure.3 downward 3 unit we have  $y = 4^x - 3$ .

• 8.Start with  $y = 4^x$  (figure 3) by shifting this one 3 unit to the right we have  $y = 4^x - 3$ .



- 9.Start with  $y = 2^x$  (figure 2) reflect it about x-axis then about the y-axis to obtain the graph  $y = -2^{-x}$ . • 9.Start with  $y = 2^x$  (figure 2) reflect it about x-axis then about the y-axis to obtain the graph  $y = -2^{-x}$ . • 10.Start with  $y = e^{-x}$  (figure 13), stretch this vertically by a factor of 2 and shift 1 unit upward. =  $2e^x$   $y = 1 + 2e^x$
- set the graph of  $y = e^{-x}$ . Then we compress the
- lect about the x-axis to get the graph of
- graph of  $y = e^{-x}$ . Then we compress the
- out the x-axis to get the graph of



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- asymptote.  $v = 2^x$ 
  - <sup>7</sup>1/
- We start with the graph of y = e<sup>x</sup> (Figure 13), vertically stretch by a factor of 2, and then shift 1 unit upward. There is a horizontal asymptote of y = 1.



• 11.Start with  $y = e^x$  and reflect this about y-axis. Then compress the graph vertically by a factor of 2 then reflect it about x-axis, finally shift upward one unit to have  $y = 1 - \frac{1}{2}e^{-x}$ .

 $e^x$  2 units to the right, we replace x with x - 2



he graph with expansions with yand then and reflect this about x-axis. Then shift upward one unit. Finally stretch vertically

by a factor of 2. he graph with equation  $y = e^{-x}$ ) and then <sup>4)</sup>.



 $= \{t \mid t \le 0\}$ 

3.

ives



- (a) To find the equation of the graph that results from shifting the graph of  $y = e^x 2$  units downward, we subtract 2 from the original (fingtion to get  $y = 2e^{x-2}$  (c)  $y = -e^x$  (d)  $y = e^{-x}$  (e)  $y = -e^{-x}$ 
  - (b) To find the equation of the graph that results from shifting the graph of  $y = e^x 2$  units to the right, we replace x with x 2 in the original function to get  $y = e^{(x-2)}$ .
    - (c) To find the equation of the graph that results from reflecting the graph of  $\underline{x} = \overline{4}$ ,  $e_{w}^{x}$  about the  $\underline{x}$  axis, we multiply the original  $-e^{x} + 8$ . function by -1 to get  $y = -e^{x}$ .
    - (d) To find the equation of the graph that results from reflecting the graph of  $y = e^x$  about the *y*-axis, we replace *x* with -x in the original function to get  $y = e^{-x}$ .
    - (e) To find the equation of the graph that results from reflecting the graph of  $y = e^x$  about the x-axis and then about the y-dx5s(a)Since cull tiple the of final diluction Bythen (where y here do in a different time x with -x in this equation to get  $y = -e^{-x}$ .
  - 14. (a) This reflection consists of first reflecting the graph about the x-axi2 (giving the graph with equation  $y = -e^x$ ) and then shifting this graph  $2 \cdot 4 = 8$  units upward. So the equation is  $y = -e^x + 8$ .
    - (b) This reflection consists of first reflecting the graph about the *y*-axis (giving the graph with equation  $y = e^{-x}$ ) and then shifting this graph  $2 \cdot 2 = 4$  units to the right. So the equation is  $y = e^{-(x-4)}$ .
  - 45 (a) The denominator  $1 + e^{\pi}$  is never equal to zero because  $e^{\pi} > 0$  so the domain of  $f(x) = 1/(1 + e^{\pi})$  is  $\mathbb{D}$

(b)Since  $1 - e^x = 0$  only if x = 0 therefore the domain is  $(-\infty, 0) \bigcup (0, \infty)$ .

- 16.(a)Since the domain of sine and exponential function have domain R therefore the domain of g is R.
  (b)1 2<sup>t</sup> ≥ 0 ⇒ t ≤ 0 therefore the domain is (-∞, 0].
- $19.\frac{5^{x+h}-5^x}{h} = 5^x(\frac{5^h-1}{h}).$
- 20.For suppose the month is February therefore by method.2 you should pay  $(1 + 2 + 2^2 + ... + 2^{27}) = 2^{28} 1 = 268435455$  cent equal to 2684354.55 dollars which is larger than method one.