

Section 6.3: Exponential functions

1) $f(x) = 2^x$

- a) Make a table of values and sketch a graph
- b) Find the domain of $f(x)$
- c) Find the range of $f(x)$
- d) Find the horizontal asymptote

2) $f(x) = 3^x$

- a) Make a table of values and sketch a graph
- b) Find the domain of $f(x)$
- c) Find the range of $f(x)$
- d) Find the horizontal asymptote

3) $f(x) = 2^{x+3}$

- a) Make a table of values and sketch a graph
- b) Find the domain of $f(x)$
- c) Find the range of $f(x)$
- d) Find the horizontal asymptote

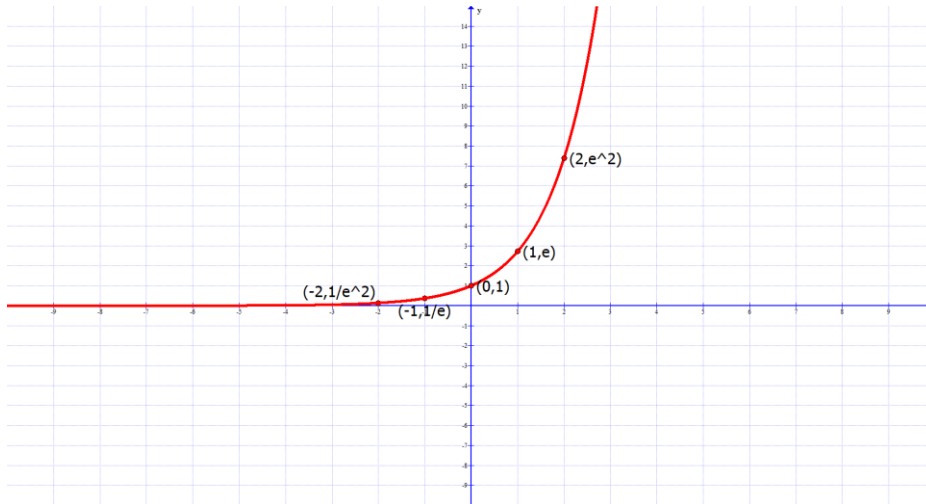
4) $f(x) = 3^{x+3}$

- a) Make a table of values and sketch a graph
- b) Find the domain of $f(x)$
- c) Find the range of $f(x)$
- d) Find the horizontal asymptote

5 – 16: Let $f(x) = e^x$

Here is a graph of $f(x) = e^x$ to help you complete the following #5 – 16.

x	-2	-1	0	1	2
f(x)	$\frac{1}{e^2} \cong 0.14$	$\frac{1}{e} \cong 0.37$	1	$e \approx 2.72$	$e^2 \cong 7.39$



- Find the requested function
- Describe the transformation from $f(x) = e^x$
- Use the transformation to sketch a graph
- Find the domain
- Find the range
- Find the horizontal asymptote

- | | |
|----------------|----------------|
| 5) $f(x-3)$ | 6) $f(x-5)$ |
| 7) $f(x+2)$ | 8) $f(x+4)$ |
| 9) $f(x) + 2$ | 10) $f(x) + 3$ |
| 11) $f(x) - 3$ | 12) $f(x) - 4$ |
| 13) $f(-x)$ | 14) $-f(x)$ |
| 15) $2f(x)$ | 16) $3f(x)$ |

Section 6.3: Exponential functions

#17 - 32 Let $g(x) = 2^x$

a) Find the indicated function

b) Describe the transformation of the graph of as compared to the graph of $g(x) = 2^x$.

17) $g(x+1)$

18) $g(x+3)$

19) $g(x-1)$

20) $g(x-4)$

21) $g(x) + 1$

22) $g(x) + 3$

23) $g(x) - 2$

24) $g(x) - 5$

25) $-g(x)$

26) $g(-x)$

27) $g(x+1) - 4$

28) $g(x + 2) - 3$

29) $g(x - 2) + 3$

30) $g(x - 3) + 1$

31) $-g(-x) + 2$

32) $-g(-x) + 1$

#33-50: Write each side with the same base then solve. Be sure to check your answer.

33) $3^{x+2} = 27$

34) $2^{x+5} = 16$

35) $4^{-x} = 64$

36) $6^{-x} = 216$

37) $\left(\frac{1}{2}\right)^{x+3} = \frac{1}{32}$

38) $\left(\frac{1}{3}\right)^{x-4} = \frac{1}{27}$

39) $\left(\frac{1}{2}\right)^{2x+1} = 16$

40) $\left(\frac{1}{2}\right)^{3x-4} = 32$

41) $5^{x+2} = 25^{3x-4}$

42) $2^{2x+1} = 8^{x-2}$

43) $3^{x-4} = 9^{3-x}$

44) $7^{4-5x} = 49^{x+1}$

45) $e^{x-4} = e^{2x-3}$

46) $e^{x-5} = e^{2x-4}$

47) $e^{3x} * e^2 = e^{-4}$

48) $e^{x-4} * e^{3x} = e^2$

49) $2^{x-4} * 2^3 = 2^5$

50) $3^{x-2} * 3^4 = 3^5$