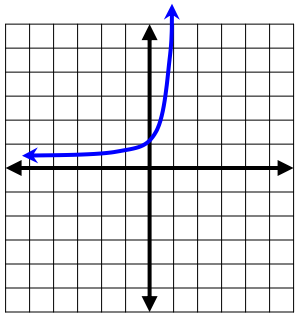
SECTION 10-1

EXERCISE A

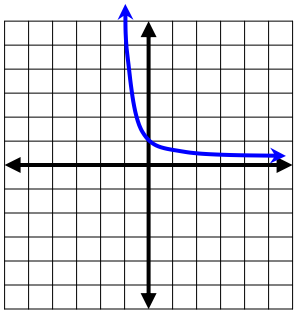
Match each function with its graph.

1) $y = 5^x$ 2) $y = 2(5)^x$ 3) $y = \left(\frac{1}{5}\right)^x$

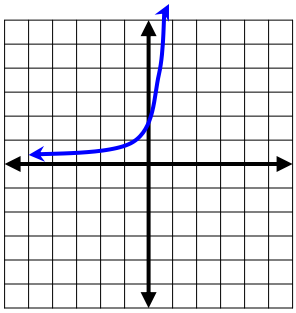
a.



b.



c.



Sketch the graph of each function. Then state the function's domain and range.

4) $y = 3(4)^x$ 5) $y = 2\left(\frac{1}{3}\right)^x$

Determine whether each function represents exponential ***growth*** or ***decay***.

6) $y = (0.5)^x$ 7) $y = 0.3(5)^x$

Write an exponential function for the graph that passes through the given points.

8) (0, 3) & (-1, 6) 9) (0, -18) & (-2, -2)

Solve each equation. Check your solution.

10) $2^{n+4} = \frac{1}{32}$ 11) $9^{2y-3} = 27^y$ 12) $4^{3x+2} = \frac{1}{256}$

Solve each inequality. Check your solution.

13) $5^{2x+3} \leq 125$ 14) $3^{3x-2} > 81$ 15) $4^{4a+6} \leq 16^a$

EXERCISE B

Sketch the graph of each function. Then state the function's domain and range.

16) $y = 3^x$ 17) $y = 5(2)^x$ 18) $y = 0.5(4)^x$ 19) $y = \left(\frac{1}{3}\right)^x$

Determine whether each function represents exponential ***growth*** or ***decay***.

20) $y = 3.5^x$ 21) $y = 2(4)^x$ 22) $y = 0.4\left(\frac{1}{3}\right)^x$ 23) $y = 3\left(\frac{5}{2}\right)^x$

24) $y = 30^{-x}$ 25) $y = 0.2(5)^{-x}$

Write an exponential function for the graph that passes through the given points.

26) (0, -2) & (-2, -32) 27) (0, 7) & (2, 63) 28) (0, -0.3) & (5, -9.6)

29) The number of bacteria in a colony is growing exponentially.

a) Write an exponential function to model the population ***y*** of bacteria ***x*** hours after 2 p.m.

b) How many bacteria were there at 7 p.m. that day?

Solve each equation. Check your solution.

30) $2^{3x+5} = 128$ 31) $\left(\frac{1}{9}\right)^m = 81^{m+4}$ 32) $\left(\frac{1}{7}\right)^{y-3} = 343$ 33) $36^{2p} = 216^{p-1}$

Solve each inequality. Check your solution.

34) $3^{n-2} > 27$ 35) $32^{5p+2} \geq 16^{5p}$ 36) $16^n < 8^{n+1}$ 37) $2^{2n} \leq \frac{1}{16}$

EXERCISE C

38) Suppose you deposit a principal amount of ***P*** dollars in a bank account that pays compound interest. If the annual interest rate is ***r*** (expressed as a decimal) and the bank makes interest payments ***n*** times every year, the amount of money ***A*** you would have after ***t*** years is given by:

$$A(t) = P\left(1+\frac{r}{n}\right)^{nt}$$

a) Write an equation giving the amount of money you would have after ***t*** years if you deposit $1000 into an account paying 4% annual interest compounded quarterly (four times per year).

b) Find the account balance after 20 years.

ANSWERS:

1)	a	11)	$y = -3$	19)	$R = y > 0$	29b)	≈1,008,290
3)	b	13)	$x \leq 0$	21)	growth	31)	-8/3
5)	D = all reals	15)	$a \leq -3$	23)	growth	33)	-3
	$R = y > 0$	17)	D = all reals	25)	decay	35)	$p \geq -2$
7)	growth		$R = y > 0$	27)	$y = 7(3)^x$	37)	$n \leq -2$
9)	$y = -18(3)^x$	19)	D = all reals	29a)	$y = 100(6.32)^x$		