

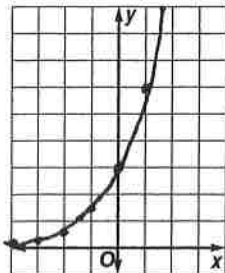
10-1

Skills Practice

Exponential Functions

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

1. $y = 3(2)^x$



Domain - All reals

Range - all positive numbers $y > 0$

Determine whether each function represents exponential growth or decay.

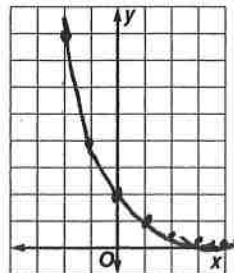
3. $y = 3(6)^x$

growth

5. $y = 10^{-x}$

decay

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



Domain - all reals

range - all positive numbers $y > 0$

4. $y = 2\left(\frac{9}{10}\right)^x$

decay

6. $y = 2(2.5)^x$

growth

Write an exponential function whose graph passes through the given points.

7. (0, 1) and (-1, 3)

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

8. (0, 4) and (1, 12)

$y = 4(3)^x$

9. (0, 3) and (-1, 6)

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

10. (0, 5) and (1, 15)

$y = 5(3)^x$

11. (0, 0.1) and (1, 0.5)

$y = 0.1(5)^x$

12. (0, 0.2) and (1, 1.6)

$y = 0.2(8)^x$

Simplify each expression.

13. $(3^{\sqrt{3}})^{\sqrt{3}}$

27

14. $(x^{\sqrt{2}})^{\sqrt{7}}$

$x^{\sqrt{14}}$

15. $5^{2\sqrt{3}} \cdot 5^{4\sqrt{3}}$

$5^{6\sqrt{3}}$

16. $x^{3\pi} \div x^{\pi}$

$x^{2\pi}$

Solve each equation or inequality. Check your solution.

17. $3^x > 9$

$x > 2$

18. $2^{2x+3} = 32$

1

19. $49^x \leq \frac{1}{7}$

$x \leq -\frac{1}{2}$

20. $4^{3x-2} = 16$

$\frac{4}{3}$

21. $3^{2x+5} = 27^x$

5

22. $2^{7x} = 3^{2x+3}$

3