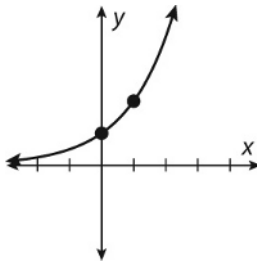
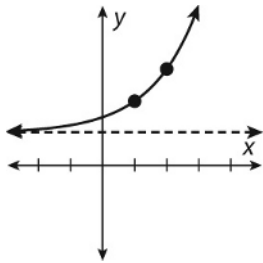


LESSON
13-1

Exponential Growth Functions

Reteach

<p>$f(x) = b^x, b > 1$</p> 	<p><u>Horizontal Asymptote</u></p> <p>$y = 0 \longrightarrow y = k$</p> <p><u>Reference Point</u></p> <p>$(0, 1) \longrightarrow (h, a + k)$</p> <p><u>Reference Point</u></p> <p>$(1, b) \longrightarrow (1 + h, ab + k)$</p>	<p>$g(x) = ab^{x-h} + k$</p> 
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Example State the domain and range of the given function. Then identify the new values of the reference points and the asymptote. Use these values to graph the function.

$$g(x) = 4(2^{x-3}) - 1$$

Step 1: Identify the parameters $a, b, h,$ and k .

$$a = 4, b = 2, h = 3, k = -1$$

Step 2: Identify the horizontal asymptote.

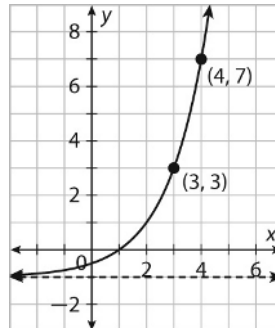
$$y = -1$$

Step 3: Identify the reference points.

$$(h, a + k) = (3, 4 + (-1)) = (3, 3)$$

$$(1 + h, ab + k) = (1 + 3, (4)(2) + (-1)) = (4, 7)$$

Step 4: Graph the function.



Step 5: Give the domain and range.

Domain $\{x \mid -\infty < x < \infty\},$

Range $\{y \mid y > -1\}$

State the domain and range of the given function. Then identify the new values of the reference points and the asymptote. Use these values to graph the function.

1. $g(x) = 3(4^{x-1}) + 1$

2. $g(x) = \frac{1}{2}(2^{x-3}) - 4$

3. $g(x) = 10^{x+5} - 5$

4. $g(x) = 5(3^{x-1}) - 2$

8. $16, 15\frac{1}{2}, 15$

9. $20, 10, 0$

Reteach 12-2

1. $f(n) = 0.5 \cdot (3)^n$;

$f(n) = 3 \cdot f(n-1), n \geq 1, f(0) = 0.5$

2. $f(n) = 6 \cdot \left(\frac{1}{2}\right)^n$;

$f(n) = \frac{1}{2} \cdot f(n-1), n \geq 1, f(0) = 6$

3. $f(n) = \frac{1}{4} \cdot (4)^n$;

$f(n) = 4 \cdot f(n-1), n \geq 1, f(0) = \frac{1}{4}$

4. $f(n) = 162 \cdot \left(\frac{1}{9}\right)^n$;

$f(n) = \left(\frac{1}{9}\right) \cdot f(n-1), n \geq 1, f(0) = 162$

Reteach 12-3

1. 410

2. 4092

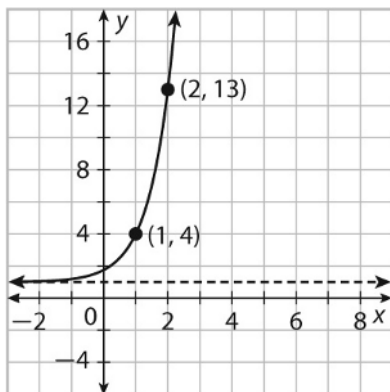
Reteach 13-1

1. Domain $\{x | -\infty < x < \infty\}$;

Range $\{y | y > 1\}$;

Reference points (1, 4) and (2, 13);

Asymptote $y = 1$;

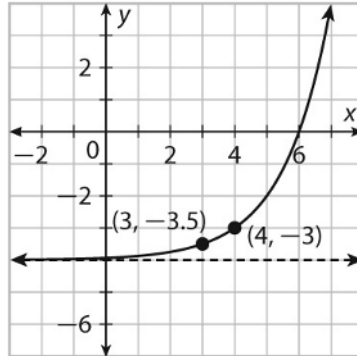


2. Domain $\{x | -\infty < x < \infty\}$;

Range $\{y | y > -2\}$;

Reference points (3, -3.5) and (4, -3);

Asymptote $y = -4$;

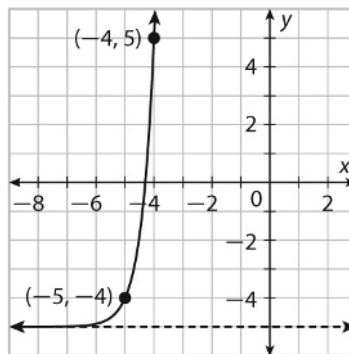


3. Domain $\{x | -\infty < x < \infty\}$;

Range $\{y | y > -5\}$;

Reference points (-5, -4) and (-4, 5);

Asymptote $y = -5$;



4. Domain $\{x | -\infty < x < \infty\}$;

Range $\{y | y > -5\}$;

Reference points (1, 3) and (2, 13);

Asymptote $y = -2$;

