Given the following functions, describe the transformations.

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

$$y = -\frac{5}{4}(2)^{x-1} + 1$$

1. How does this function move horizontally?

  A. Horizontal shift left by 2.

  B. Horizontal shift right by 2.

  C. Horizontal shift up by 4.

  D. Horizontal shift by 3.

2. Is this function a growth or decay?

3. What is the asymptote of this function?

4. Does this function stretch or shrink?

  A. Shrink by $\frac{1}{2}$

  B. Stretch by 4

  C. Stretch by 3

  D. Shrink by 2

5. Is this function a reflection?

6. What is the asymptote of this function?

  A. $y = 2$

  B. $y = 1$

  C. $y = -1$

  D. $y = -\frac{5}{4}$

7. How does this function move horizontally?

8. Is this function a reflection?

9. How does this function move vertically?

  A. Down by 1.

  B. Up by 1.

  C. Down by $\frac{5}{4}$

  D. Right by 1.

10. Is this function a stretch or shrink?

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

11. Is this function a growth or decay?

12. How does this function move vertically?

   A. Down by 3.

   B. Left by 2

   C. Down by 2

   D. Up by 3

13. Does this function stretch or shrink?

   A. Shrink by $\frac{1}{2}$

   B. Stretch by 2

   C. Shrink by 3

   D. Stretch by 5

14. How does this function move horizontally?
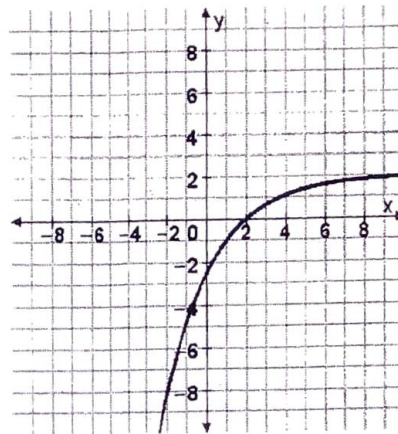
15. Is this function a reflection?

16. How would you transform the graph of $y = 2^x$ to produce $f(x) = 2^{x+3}$?

   A. Horizontal shift left 3

   B. Horizontal shift right 3
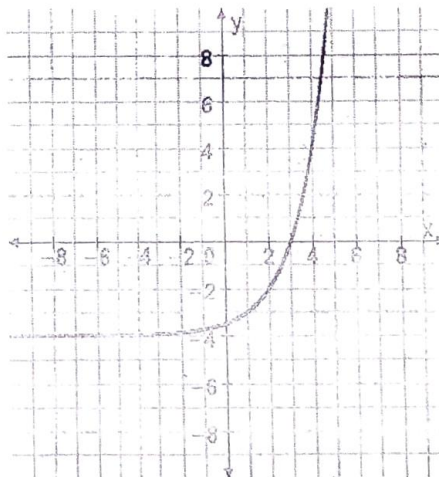
   C. Vertical shift down 3

   D. Vertical shift up 3

17. Match the graph of the function to its equation.

   A. $2\left(\frac{2}{3}\right)^{x-2} - 2$

   B. $2\left(\frac{2}{3}\right)^{x-2} + 2$

   C. $4(2)^{x-2} + 2$

   D. $-2\left(\frac{2}{3}\right)^{x-2} + 2$
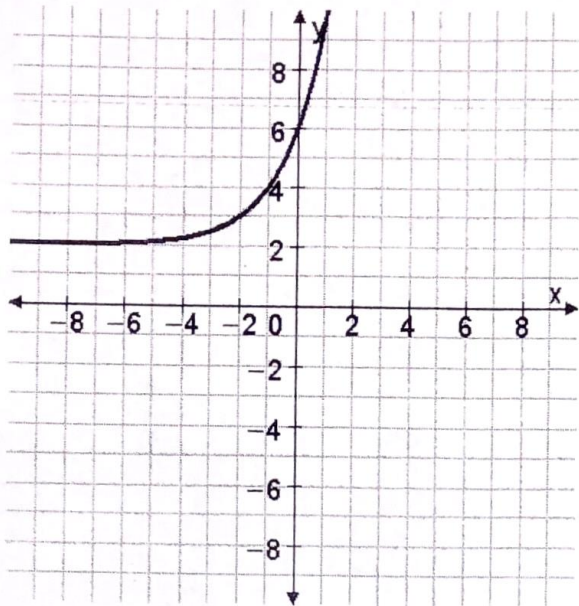

18. Match the graph of the function to its equation.

   A. $\frac{1}{2}(2)^x + 4$

   B. $-\frac{1}{2}(2)^x - 4$

   C. $\frac{1}{2}(2)^x - 4$

   D. $2\left(\frac{1}{2}\right)^x - 4$

FREE RESPONSE

Analyze the graph of the function and state the characteristics.
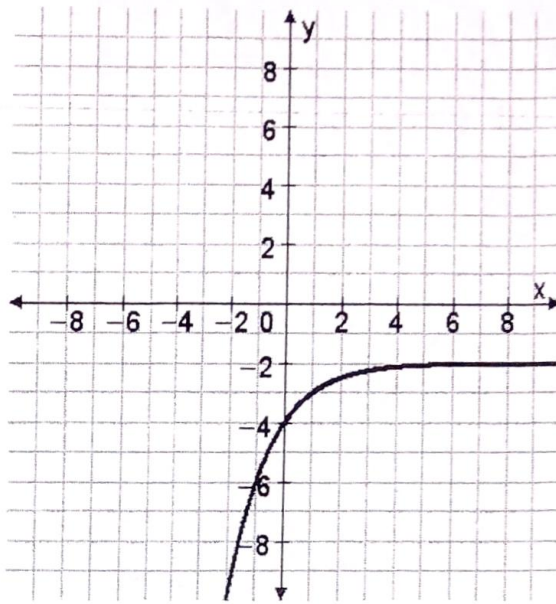
19.

20.

$$f(x) = 2(2)^{x+1} + 2$$

$$f(x) = -4\left(\frac{1}{2}\right)^{x+1} - 2$$

(1)Domain: _____

(1)Range: _____

(1)Asymptote: _____

(1)Growth or Decay?

(1)Domain: _____

(1)Range: _____

(1)Asymptote: _____

(1)Growth or Decay?