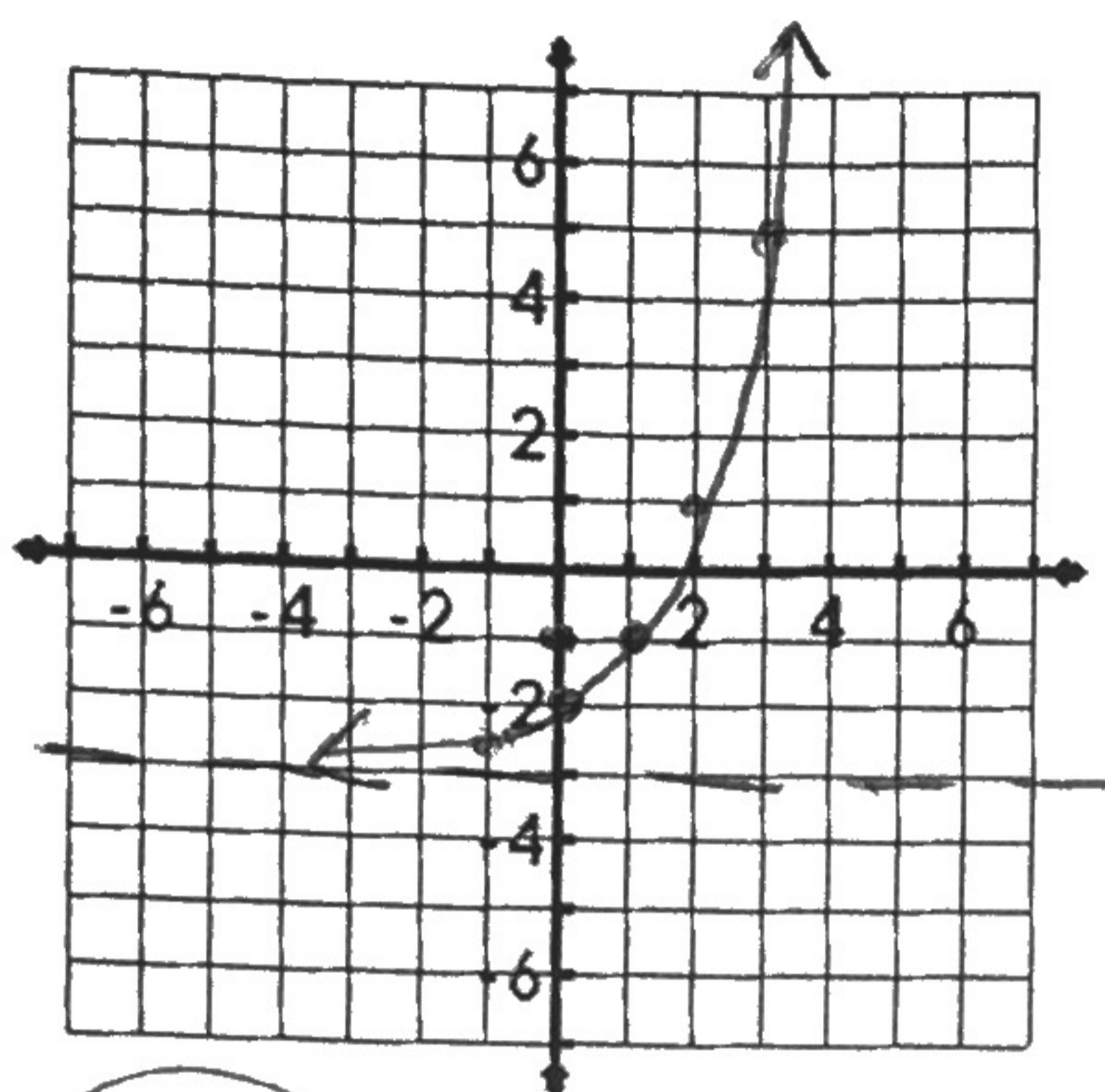


Name: KPV

Date: _____

Graphing Exponential Functions

1. $f(x) = 2^x - 3$



Growth or Decay?

Domain: \mathbb{R}

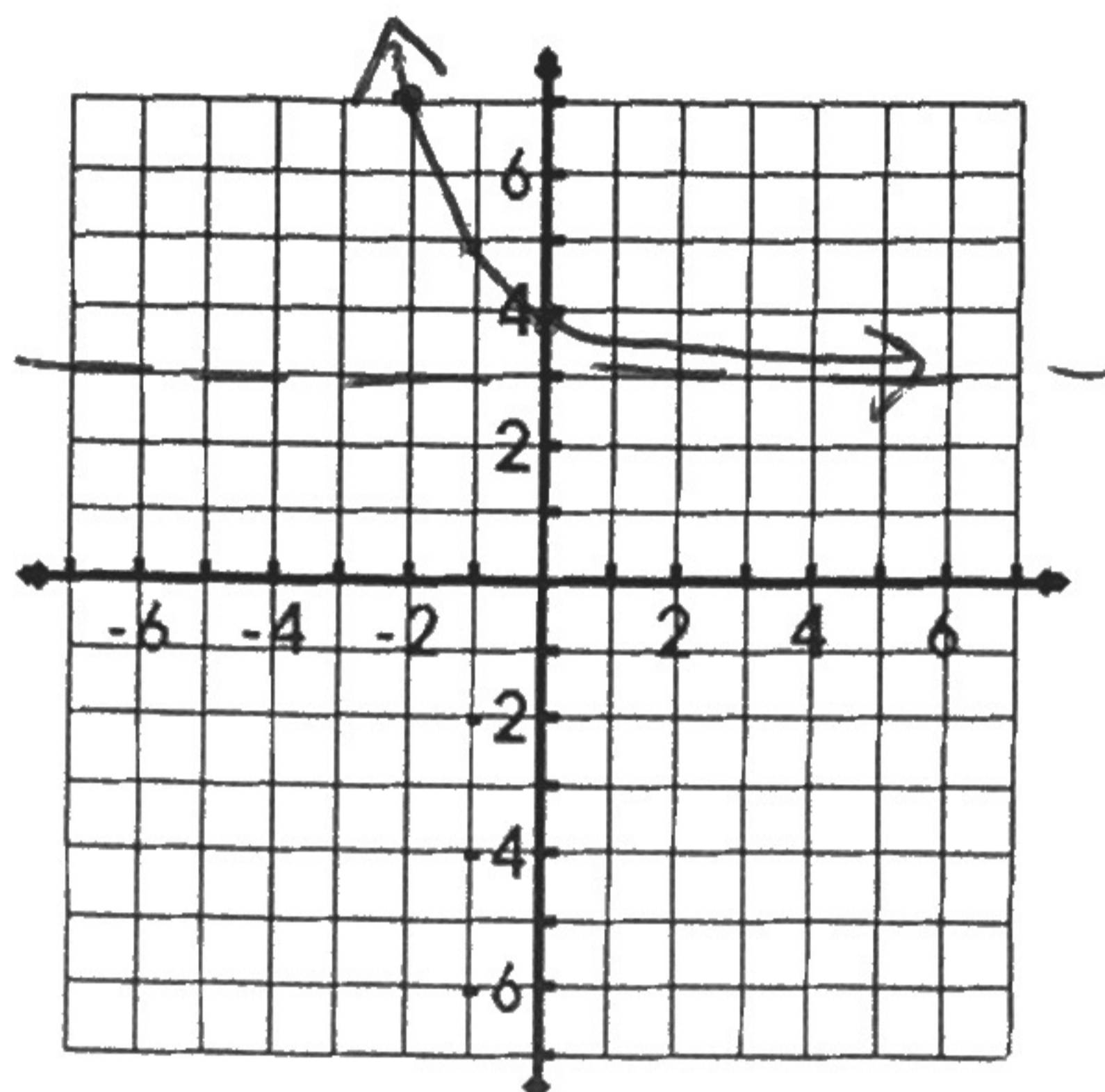
Range: $y > -3$

Asymptote: $y = -3$

Increasing/Decreasing: \mathbb{R}

Transformations:
- vertical shift down 3

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



Growth or Decay?

Domain: \mathbb{R}

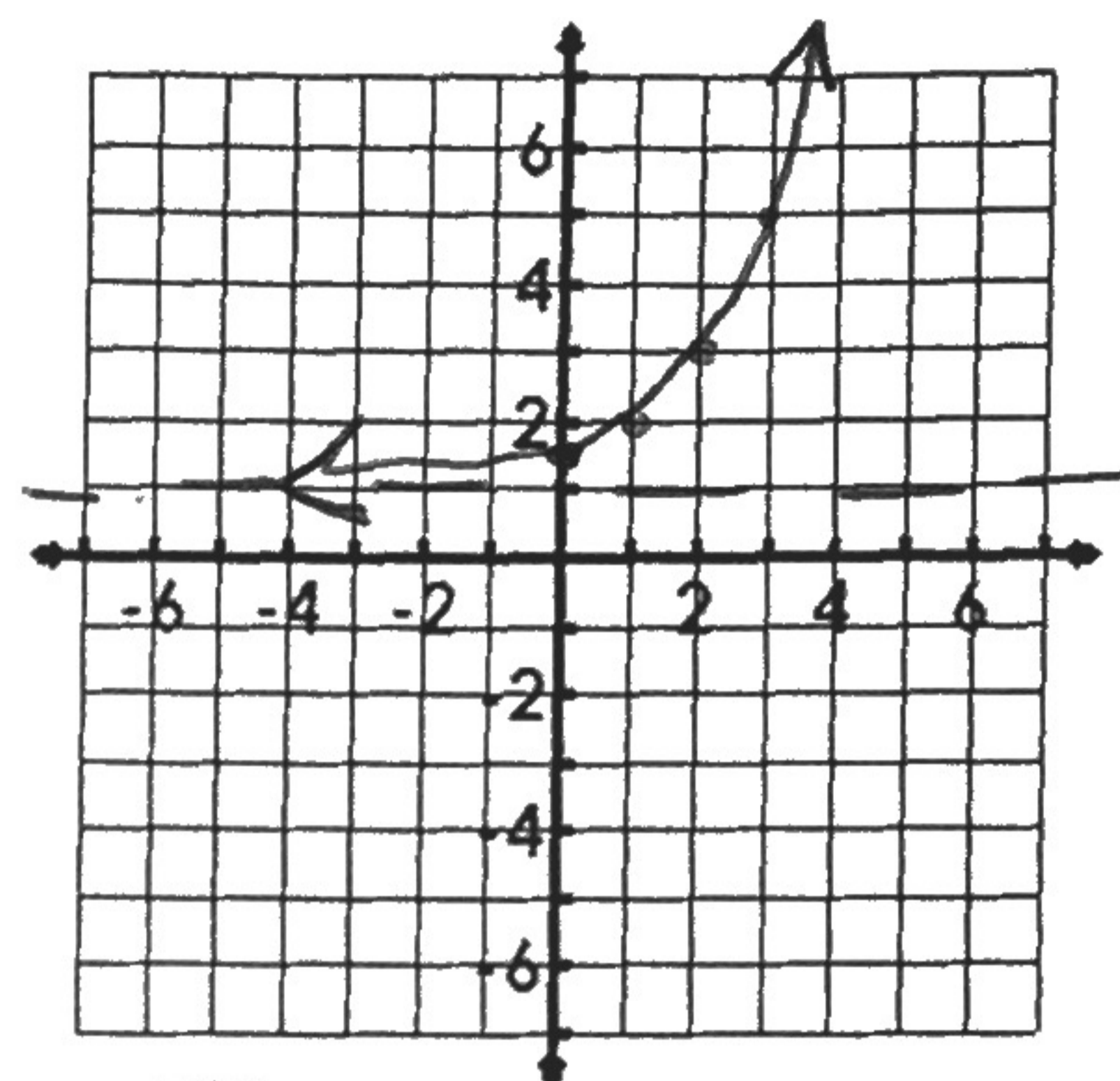
Range: $y > 3$

Asymptote: $y = 3$

Increasing/Decreasing: \mathbb{R}

Transformations:
- vertical shift up 3

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



Growth or Decay?

Domain: \mathbb{R}

Range: $y > 1$

Asymptote: $y = 1$

Increasing/Decreasing: \mathbb{R}

Transformations:
- vertical shift up 1
- horizontal shift right 1

Determine whether these exponential functions represent growth or decay and state the transformations and the asymptote.

4. $y = 2(7^x) - 1$

Growth or Decay? growth

H.A: $y = -1$

Transformations:
- vertical stretch by 2
- vertical shift down 1

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

Growth or Decay? Decay

H.A: $y = 2$

Transformations:
- reflect over x-axis
- vertical stretch by 3
- vertical shift up 2

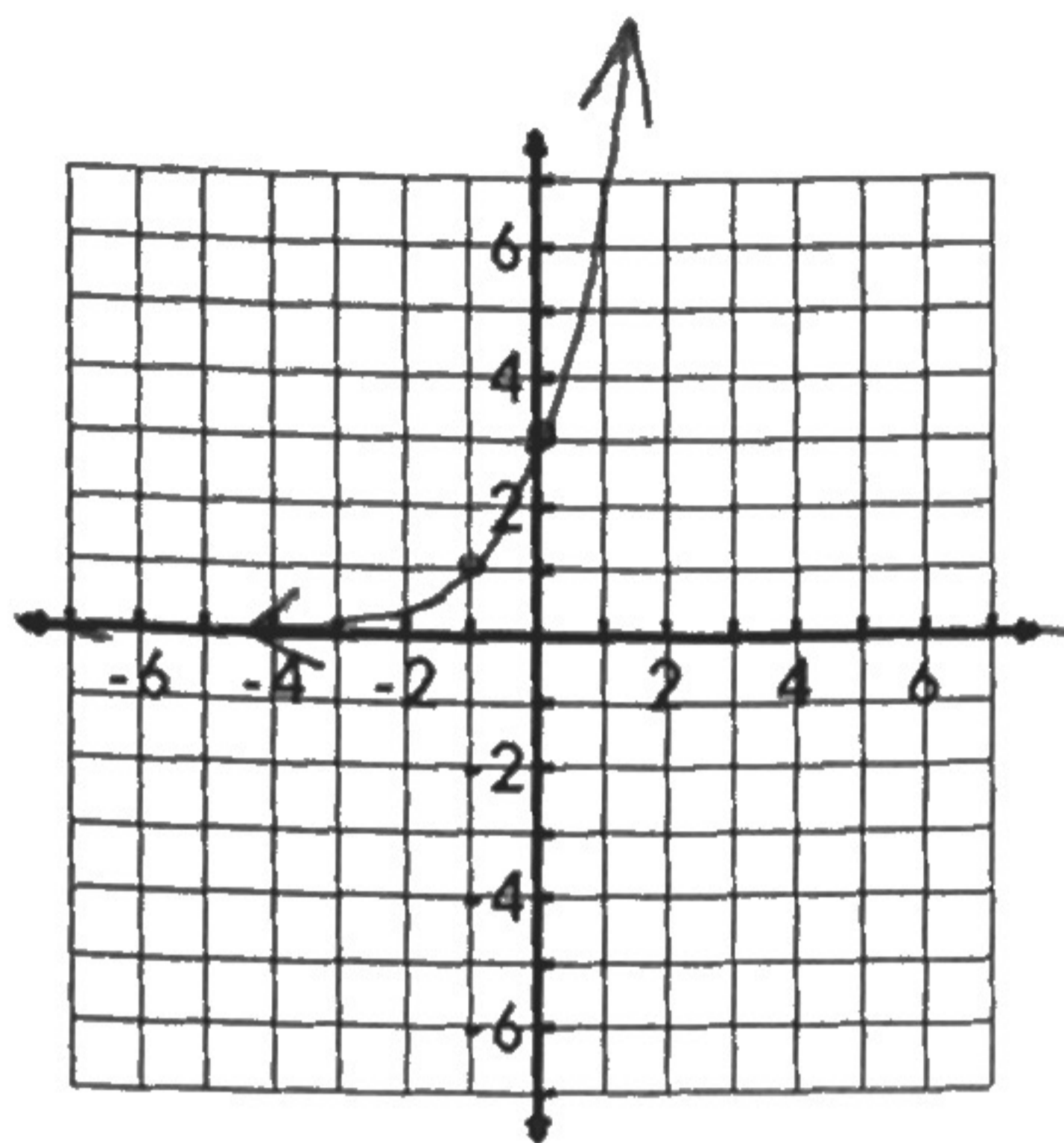
6. $y = 0.5(2)^{x-1}$

Growth or Decay? Growth

H.A: $y = 0$

Transformations:
- vertical shrink by 0.5
- horizontal shift right 1

7. $f(x) = 3^{x+1}$



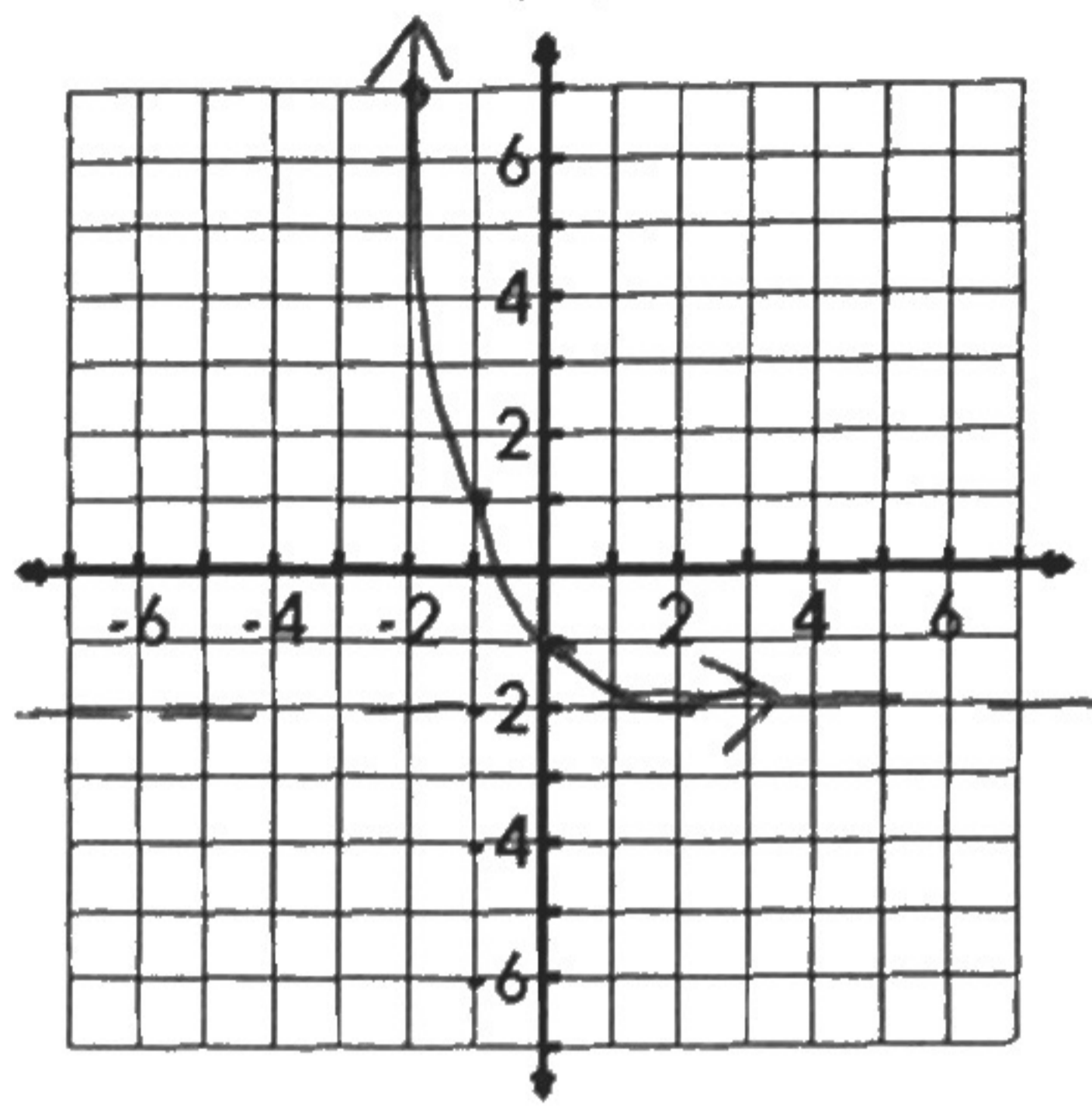
Domain: \mathbb{R}

Range: $y > 0$

Asymptote: $y = 0$

Increasing/Decreasing \mathbb{R}

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



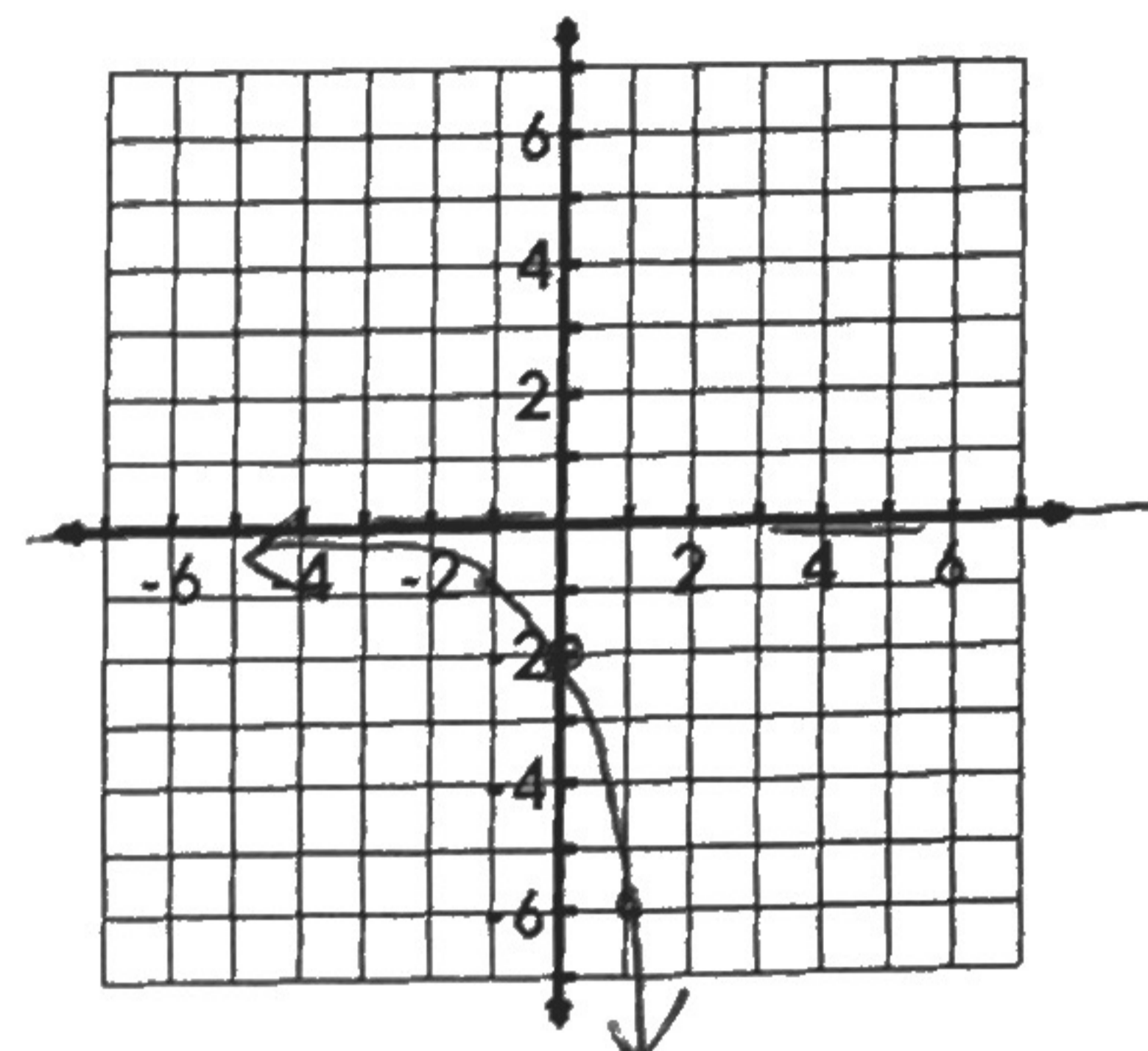
Domain: \mathbb{R}

Range: $y > -2$

Asymptote: $y = -2$

Increasing/Decreasing \mathbb{R}

9. $f(x) = -2(3)^x$



Domain: \mathbb{R}

Range: $y < 0$

Asymptote: $y = 0$

Increasing/Decreasing \mathbb{R}

10. As x increases, does $f(x) = (4.2)^x - 0.8$ increase or decrease?

increase

11. As x increases, does $f(x) = \left(\frac{5}{2}\right)^x$ increase or decrease? increase

12. $f(x) = 0.72^x - 2$

Growth or Decay? Decay

Domain: \mathbb{R}

Range: $y > -2$

Asymptote: $y = -2$

13. $f(x) = -6^x$

Growth or Decay? Decay

Domain: \mathbb{R}

Range: $y < 0$

Asymptote: $y = 0$

Using the function: $f(x) = \left(\frac{1}{4}\right)^x$, write the new function given the following transformations:

14. Down 2

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

15. Reflect over x-axis

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

16. Up 2

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