

### 11.4 Vertical Shifts

1) Translate  $f(x) = -5x + 2$ , vertically 7 units

New equation: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

2) Translate  $f(x) = \left(\frac{1}{3}\right)^x + 9$ , vertically -7 units

New equation: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

3) Translate  $f(x) = 4x + 1$ , vertically -8 units

New equation: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

4) Translate  $f(x) = \left(\frac{4}{5}\right)^x - 6$ , vertically -11 units

New equation: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

5) Translate  $f(x) = -\frac{7}{8}x + 5$ , vertically 2 units

New equation: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

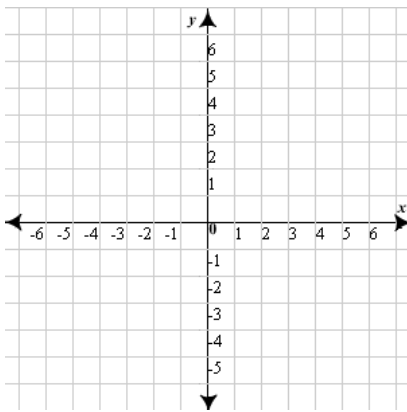
6) Translate  $f(x) = -3^x + 5$ , vertically 5 units

New equation: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

Draw a sketch of the functions below:

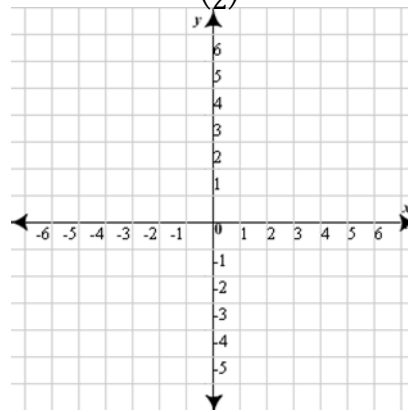
6a)  $f(x) = 2x + 1$



Slope: \_\_\_\_\_

Y-intercept: ( , )

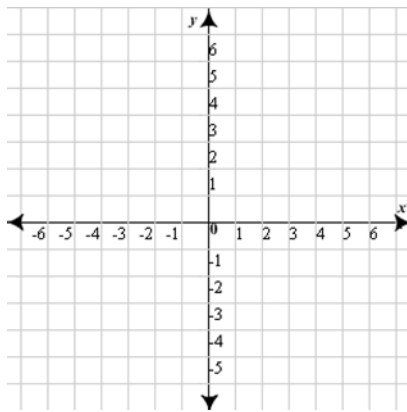
7a)  $f(x) = \left(\frac{1}{2}\right)^x + 1$



Slope: \_\_\_\_\_

Y-intercept: ( , )

6b)  $f(x) = 2x - 2$

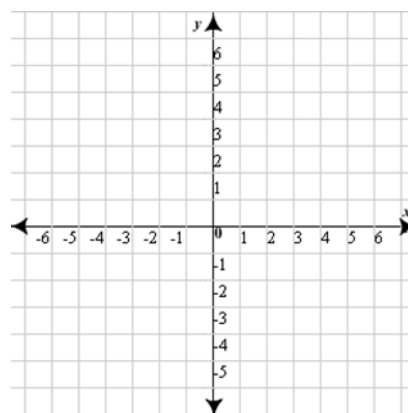


Slope: \_\_\_\_\_

Y-intercept: ( , )

What is the vertical shift? \_\_\_\_\_

7b)  $f(x) = \left(\frac{1}{2}\right)^x + 5$

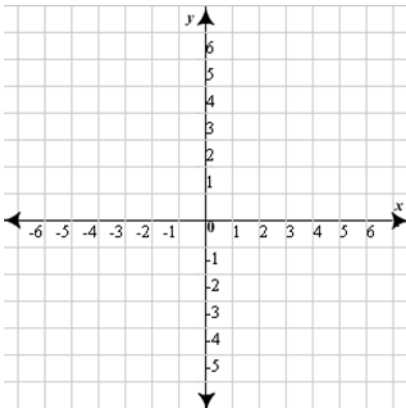


Slope: \_\_\_\_\_

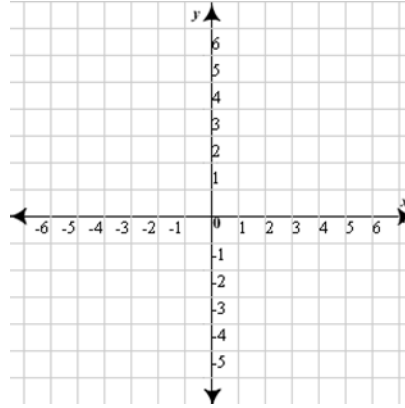
Y-intercept: ( , )

What is the vertical shift? \_\_\_\_\_

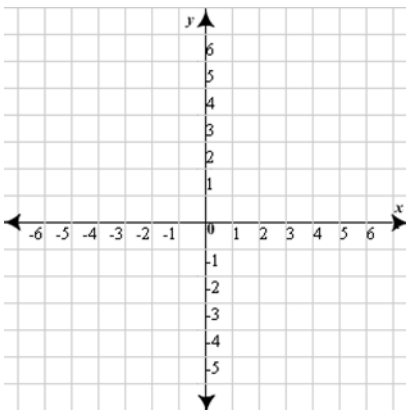
8) Translate  $f(x) = -\frac{2}{3}x + 5$ , vertically  $-3$  units



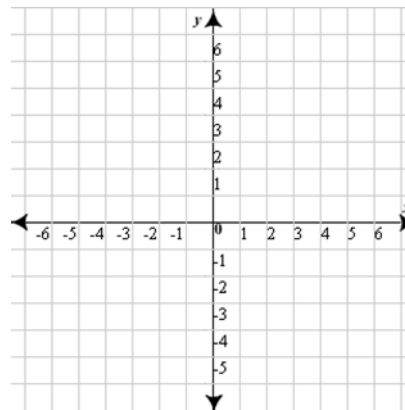
9) Translate  $f(x) = 3^x + 1$ , vertically 2 units



10) Translate  $f(x) = \frac{1}{2}x$ , vertically  $-4$  units



11) Translate  $f(x) = 2^x - 3$ , vertically 2 units



Review:

12) If  $f(x) = -2x + 4$ , find  $f(5)$ .

13) If  $f(x) = 6x - 2$ , find  $f(-3)$ .

14) If  $f(x) = -2x + 4$ , and  $g(x) = 5x - 2$ , find  $g(f(-2))$ .