4.2 WS 2

Evaluate the exponential function for the given *x* values.

1. $f(x)=5^x$ a. $x=4$ b. $x=-3$

2. $g(x)=7^x$ a. $x=4$ b. $x=-2$

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

4. $g(x)=\left(\frac{1}{4}\right)^x$ a. $x=-2$ b. $x=4$

Use a calculator to evaluate the exponential function for the given *x* value. Round to the nearest hundredth.

5. $f(x)=6^x;\ x=2.5$

6. $h(x)=e^x;\ x=\sqrt{2}$

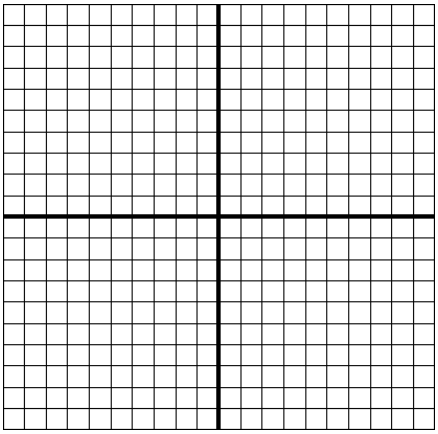
7. $g(x)=4.6^x;\ x=-3$

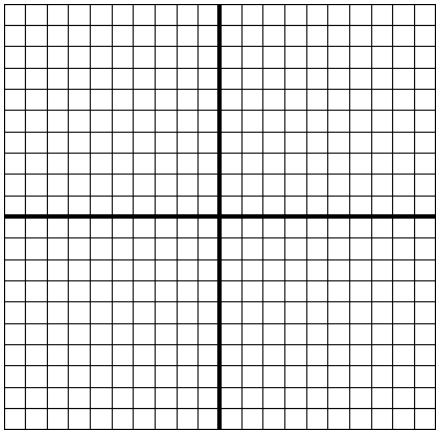
Sketch the graph of each function.

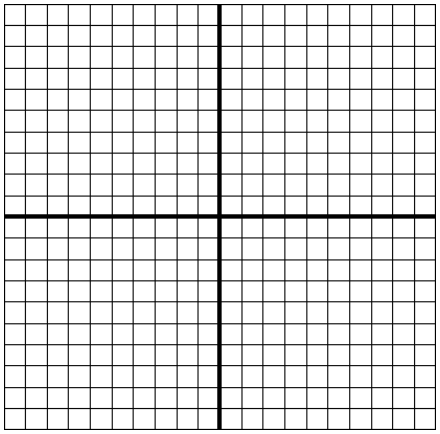
8. $f(x)=2^x$

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

10. $h(x)=\left(\frac{2}{5}\right)^x$







Explain how to use the graph of the first function *f* to produce the graph of the second function *F*.

11. $f(x)=2^x;F(x)=2^{x+7}$

12. $f(x)=4^x;F(x)=4^x-4$

13. $f(x)=(3)^x;F(x)=5(3)^x$

14. $f(x)=\left(\frac{1}{3}\right)^x;F(x)=\left(\frac{1}{3}\right)^{-x}$

15. The monthly income *I*, in dollars, from a new product is given by $I(t) = 8600 - 5500e^{-0.005t}$ where *t* is the time, in months, since the product was first put on the market.

a. What was the monthly income after the 10^{th} month and after the 100^{th} month?

b. What will the monthly income from the product approach as the time increases without bound?

Use the composition of functions to determine whether *f* and *g* are inverses of one another.

16. $f(x) = \frac{4}{-x-2} + 2;\ g(x) = -\frac{1}{x+3}$

17. $f(x) = \frac{x+7}{2};\ g(x) = 2x - 7$

Find the inverse of each function, then state the domain and range of $f^{-1}(x)$.

18. $f(x) = \sqrt[3]{2x-4}$

19. $f(x) = \sqrt{x+8}$

20. $f(x) = \frac{x-9}{x}$