Identify if the function is exponential growth or decay and justify your response.

1. $f(x) = 6.7\left(\frac{5}{21}\right)^x$	2. $f(x) = \frac{2}{3}\left(\frac{3}{2}\right)^x$	3. $f(x) = 1.4(0.07)^x$	4. $f(x) = 6(2.06)^x$
Exponential Growth or Decay	Exponential Growth or Decay	Exponential Growth or Decay	Exponential Growth or Decay

The following values are output values of an exponential function of the form $f(x) = a \cdot b^x$, where a and b are constants. Write the function along with the input value that represents the output value.

5. $0.6 \cdot 0.6 \cdot 0.6 \cdot 0.6 \cdot 0.6 \cdot 2$	6. $2 \cdot 2 \cdot 2 \cdot 0.6$	7. $1.7 \cdot 1.7 \cdot 1.7 \cdot 1.7$	8. $4 \cdot 5 \cdot 5$
$f(x) =$	$f(x) =$	$f(x) =$	$f(x) =$
where $x =$	where $x =$	where $x =$	where $x =$

Answer the questions for each exponential function.

9. $f(x) = (0.9)^x$

a. Is the function increasing or decreasing?

b. Is the function concave up or concave down?

c. Find $\lim\limits_{x \to -\infty} f(x) =$

d. Find $\lim\limits_{x \to \infty} f(x) =$

10. $f(x) = -5\left(\frac{1}{7}\right)^x$

a. Is the function increasing or decreasing?

b. Is the function concave up or concave down?

c. Find $\lim\limits_{x \to -\infty} f(x) =$

d. Find $\lim\limits_{x \to \infty} f(x) =$

11. $f(x) = 2(6)^x$

a. Is the function increasing or decreasing?

b. Is the function concave up or concave down?

c. Find $\lim\limits_{x \to -\infty} f(x) =$

d. Find $\lim\limits_{x \to \infty} f(x) =$

12. $f(x) = -24(2.3)^x$

a. Is the function increasing or decreasing?

b. Is the function concave up or concave down?

c. Find $\lim\limits_{x \to -\infty} f(x) =$

d. Find $\lim\limits_{x \to \infty} f(x) =$

Answers to 2.3 CA #2

1. Decay because $a > 0$ and $0 < b < 1$	2. Growth because $a > 0$ and $b > 1$	3. Decay because $a > 0$ and $0 < b < 1$	4. Growth because $a > 0$ and $b > 1$
5. $f(x) = 2(0.6)^x$ where $x = 5$	6. $f(x) = 0.6(2)^x$ where $x = 3$	7. $f(x) = 1.7^x$ where $x = 4$	8. $f(x) = 4(5)^x$ where $x = 2$
9. a. Decreasing b. Concave up c. $\lim\limits_{x \to -\infty} f(x) = -\infty$ d. $\lim\limits_{x \to \infty} f(x) = 0$	10. a. Increasing b. Concave down c. $\lim\limits_{x \to -\infty} f(x) = -\infty$ d. $\lim\limits_{x \to \infty} f(x) = 0$	11. a. Increasing b. Concave up c. $\lim\limits_{x \to -\infty} f(x) = 0$ d. $\lim\limits_{x \to \infty} f(x) = \infty$	12. a. Decreasing b. Concave down c. $\lim\limits_{x \to -\infty} f(x) = 0$ d. $\lim\limits_{x \to \infty} f(x) = -\infty$