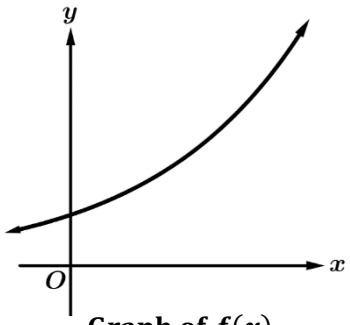



**Graph of $f(x)$**

1. The graph of the exponential function $f$ is shown above. Which of the following pairs of limit statements describing the end behavior of $f$ is correct?

(A) $\lim_{x\to-\infty} f(x)=-\infty$ and $\lim_{x\to\infty} f(x)=\infty$

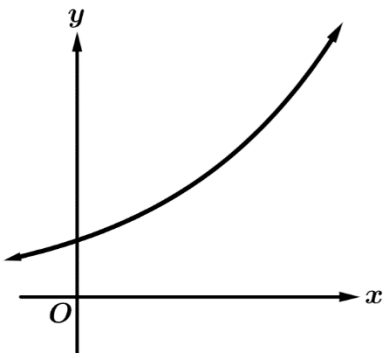
(B) $\lim_{x\to-\infty} f(x)=\infty$ and $\lim_{x\to\infty} f(x)=0$

(C) $\lim_{x\to-\infty} f(x)=0$ and $\lim_{x\to\infty} f(x)=\infty$

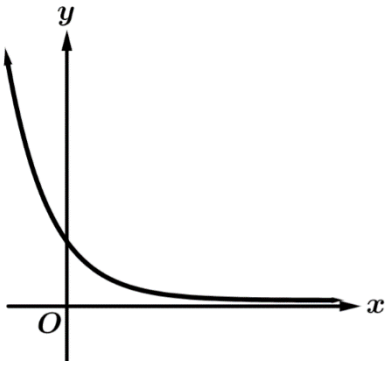
(D) $\lim_{x\to0} f(x)=-\infty$ and $\lim_{x\to\infty} f(x)=\infty$

2. Let $g$ be an exponential function that is increasing and concave down. Which of the following could be the graph of $g$?

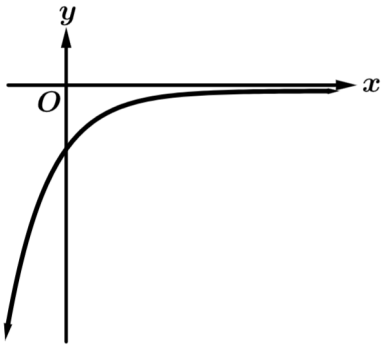
(A)



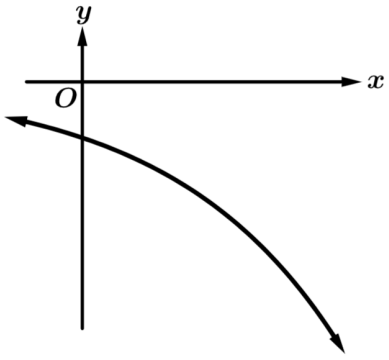

(B)

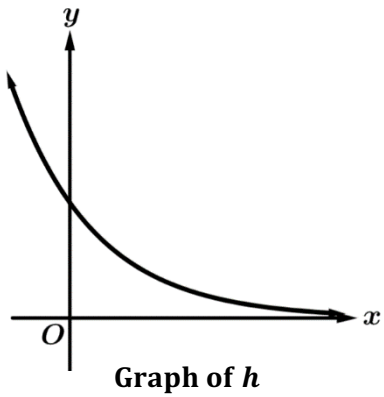



(C)




(D)






**Graph of *h***

3. The graph of the exponential function $h$ is shown above. Which of the following could be the expression for $h$?

(A) $h(x)=-2\left(\frac{2}{3}\right)^x$ (B) $h(x)=-\frac{2}{3}(2)^x$ (C) $h(x)=\frac{2}{3}(2)^x$ (D) $h(x)=2\left(\frac{2}{3}\right)^x$

$a>0$ and $0<b<1 \Rightarrow$ decay

4. Let $f(x)=3^x$. Which of the following statements about the graph of $f$ is correct?

(A) $f$ is increasing at an increasing rate. Increasing and concave up

(B) $f$ is increasing at a decreasing rate.

(C) $f$ is decreasing at an increasing rate.

(D) $f$ is decreasing at a decreasing rate.

5. Let $g(x)=-2(5)^x$. Which of the following statements about the graph of $g$ is correct?

(A) $g$ is increasing at an increasing rate.

(B) $g$ is increasing at a decreasing rate.

(C) $g$ is decreasing at an increasing rate.

(D) $g$ is decreasing at a decreasing rate. Decreasing and concave down $a<0$ and $b>1$ Growth but reflected over $x-$axis

6. The exponential function $k$ exhibits exponential decay. Which of the following could be $k$?

(A) $k(x)=4\left(\frac{2}{3}\right)^x$ (B) $k(x)=\frac{2}{3}(4)^x$ (C) $k(x)=-4x^2$ (D) $k(x)=-\frac{1}{2}x^2$

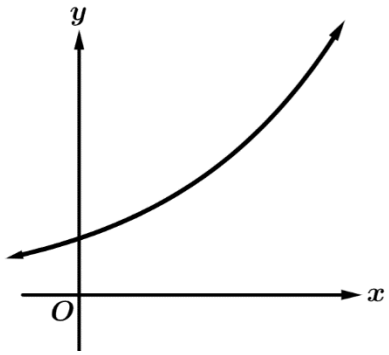
$a>0$ and $0<b<1 \Rightarrow$ decay

7. The graph of the exponential function $f$ has the following end behaviors:

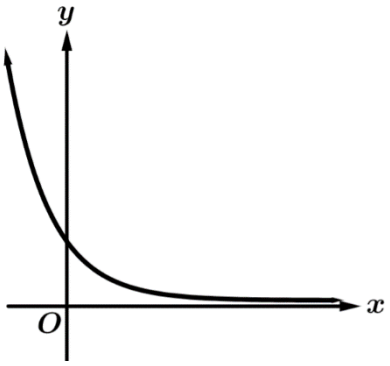
$$\lim_{x\to-\infty} f(x)=\infty \text{ and } \lim_{x\to\infty} f(x)=0$$

Which of the following could be the graph of $f$?

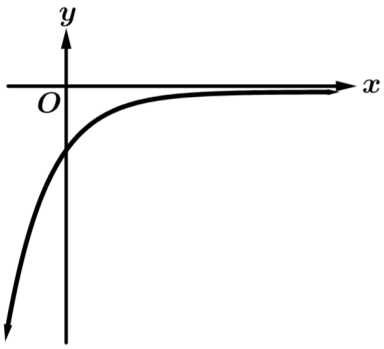
(A)



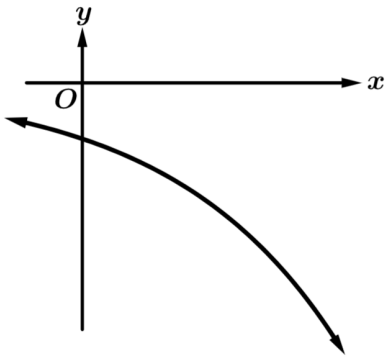

(B)




(C)




(D)




8. The graph of the exponential function $g$ has the following end behaviors:

$$\lim_{x\to-\infty} g(x)=0 \text{ and } \lim_{x\to\infty} g(x)=-\infty$$

Which of the following could be an equation for $g$?

(A) $g(x)=-3\left(\frac{1}{2}\right)^x$ (B) $g(x)=-\frac{1}{2}(3)^x$ (C) $g(x)=3\left(\frac{1}{2}\right)^x$ (D) $g(x)=\frac{1}{2}(3)^x$

$a<0$ and $b>1$ Growth but reflected over $x-$axis

9. Let $h$ be an exponential function defined by $h(x)=5\left(\frac{\pi}{3}\right)^x$. Which of the following statement pairs is correct?

(A) $h$ is increasing and the graph of $h$ is concave up.

(B) $h$ is increasing and the graph of $h$ is concave down. $a>0$ and $b>1 \Rightarrow$ growth

(C) $h$ is decreasing and the graph of $h$ is concave up.

(D) $h$ is decreasing and the graph of $h$ is concave down.