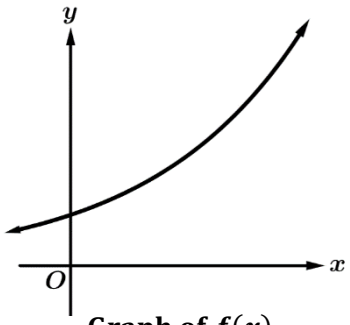


Graph of $f(x)$

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

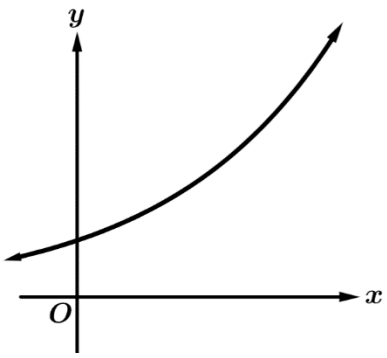
(B) $\lim_{x\to-\infty} f(x) = \infty$ and $\lim_{x\to\infty} f(x) = 0$

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

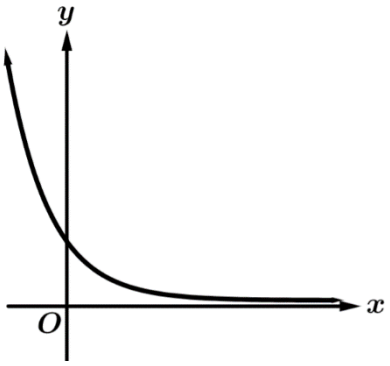
(D) $\lim_{x\to0} f(x) = -\infty$ and $\lim_{x\to\infty} f(x) = \infty$

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

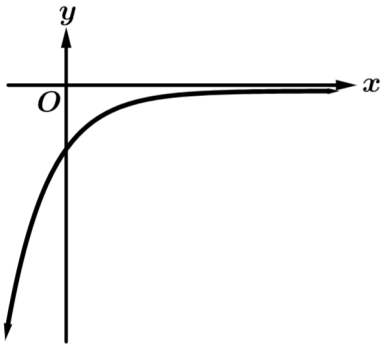
(A)



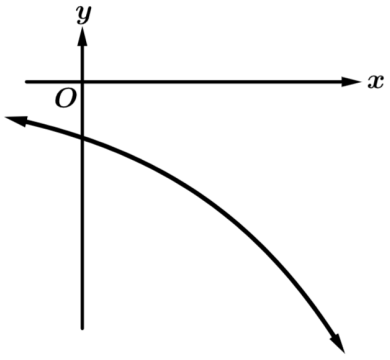
(B)

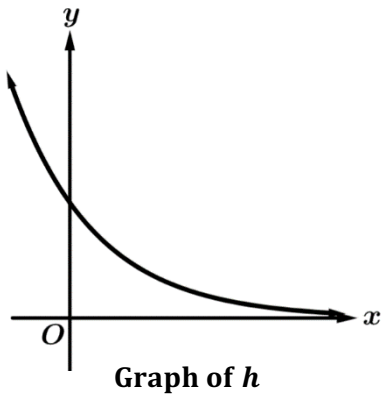


(C)



(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) $h(x) = 2\left(\frac{2}{3}\right)^x$

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.

(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.

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

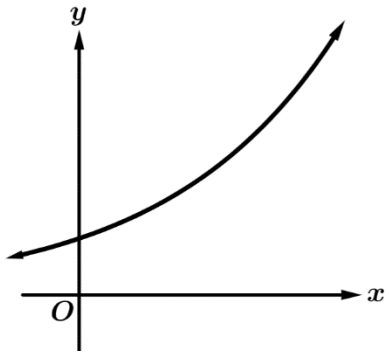
(A) $k(x) = 4\left(\frac{2}{3}\right)^x$ (B) $k(x) = \frac{2}{3}(4^x)$ (C) $k(x) = -4x^2$ (D) $k(x) = -\frac{1}{2}x^2$

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

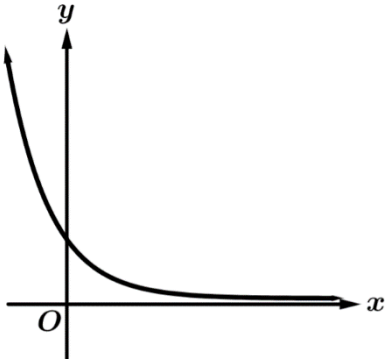
$$\lim_{x\to-\infty} f(x)=\infty \text{ and } \lim_{x\to\infty} f(x)=0$$

Which of the following could be the graph of f?

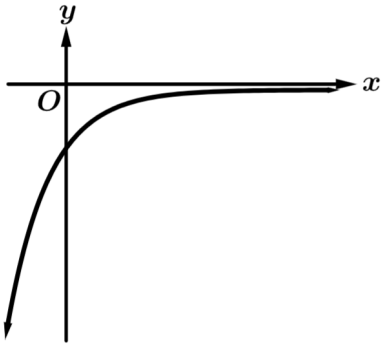
(A)



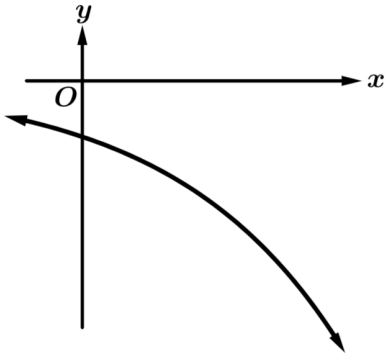
(B)



(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) $g(x)=\frac{1}{2}(3)^x$

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.

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

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