

College Algebra
Exponential & Logarithmic Functions

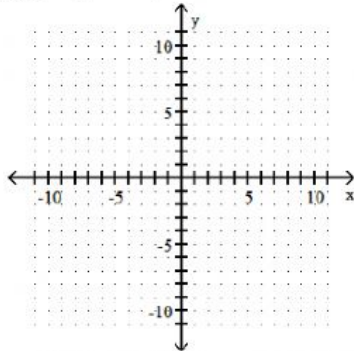
Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

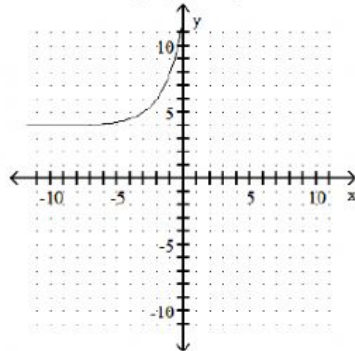
Use transformations to graph the function. Determine the domain, range, and horizontal asymptote of the function.

1) $f(x) = -2^{x+3} + 4$

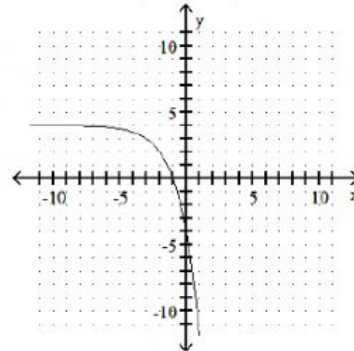
1) _____



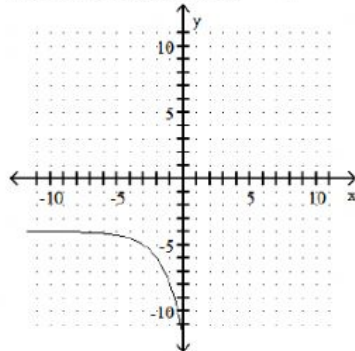
A) domain of $f: (-\infty, \infty)$; range of $f: (-4, \infty)$;
horizontal asymptote: $y = 4$



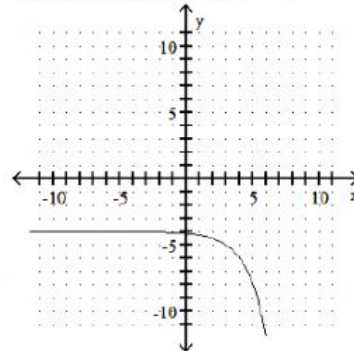
B) domain of $f: (-\infty, \infty)$; range of $f: (-\infty, 4)$;
horizontal asymptote: $y = 4$



C) domain of $f: (-\infty, \infty)$; range of $f: (-\infty, -4)$;
horizontal asymptote: $y = -4$

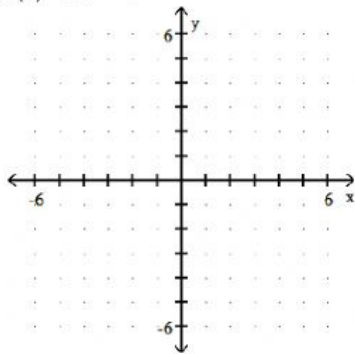


D) domain of $f: (-\infty, \infty)$; range of $f: (-\infty, -4)$;
horizontal asymptote: $y = -4$

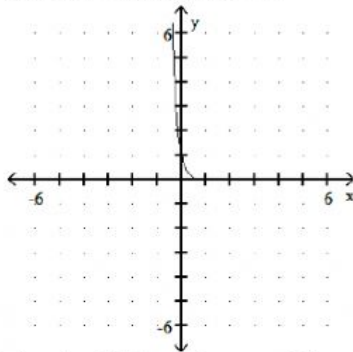


2) $f(x) = 5(x - 3)$

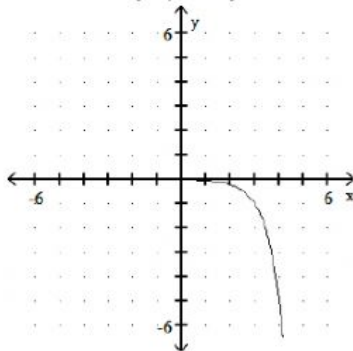
2) _____



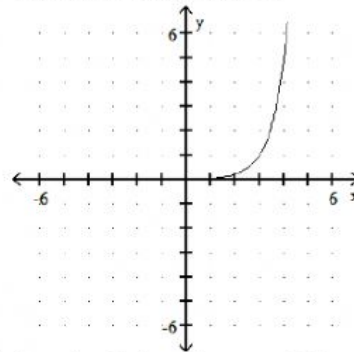
A) domain of f : $(-\infty, \infty)$; range of f : $(0, \infty)$
horizontal asymptote: $y = 0$



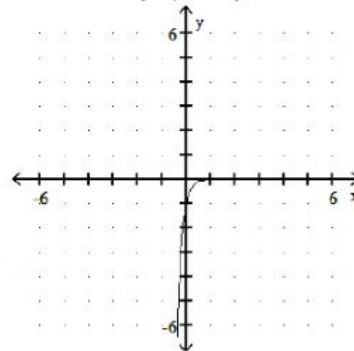
C) domain of f : $(-\infty, \infty)$; range of f : $(-\infty, 0)$
horizontal asymptote: $y = 0$



B) domain of f : $(-\infty, \infty)$; range of f : $(0, \infty)$
horizontal asymptote: $y = 0$

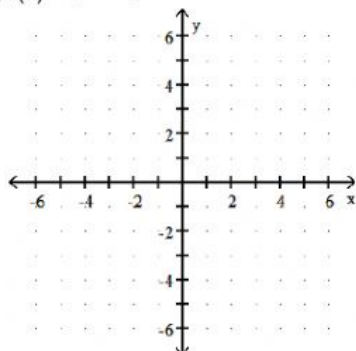


D) domain of f : $(-\infty, \infty)$; range of f : $(-\infty, 0)$
horizontal asymptote: $y = 0$

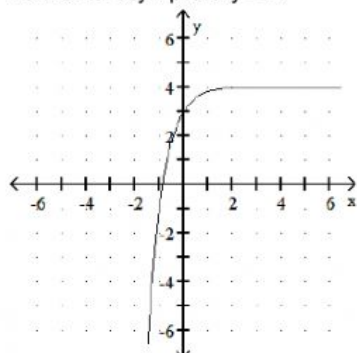


3) $f(x) = 4^{-x} + 5$

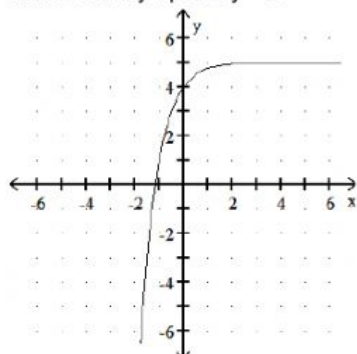
3) _____



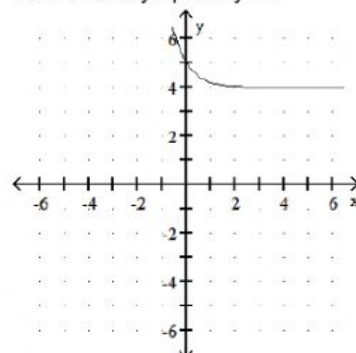
A) domain of f : $(-\infty, \infty)$; range of f : $(4, \infty)$
horizontal asymptote: $y = 4$



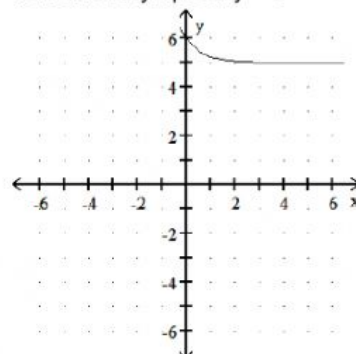
C) domain of f : $(-\infty, \infty)$; range of f : $(5, \infty)$
horizontal asymptote: $y = 5$



B) domain of f : $(-\infty, \infty)$; range of f : $(4, \infty)$
horizontal asymptote: $y = 4$



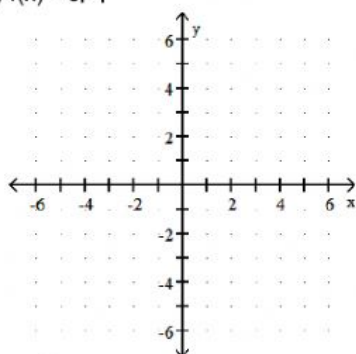
D) domain of f : $(-\infty, \infty)$; range of f : $(5, \infty)$
horizontal asymptote: $y = 5$



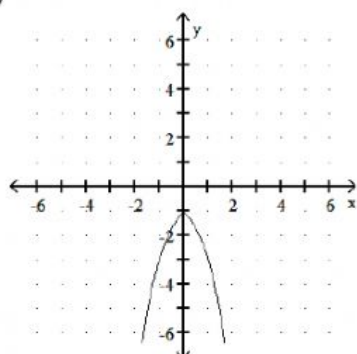
Graph the function.

4) $f(x) = 3|x|$

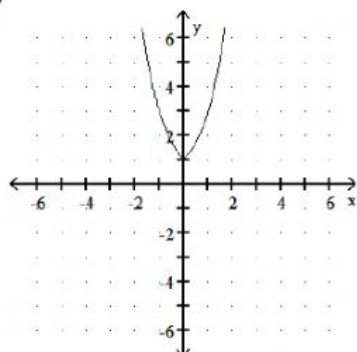
4) _____



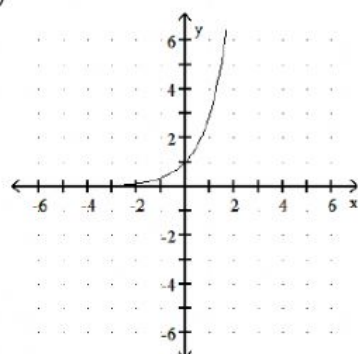
A)



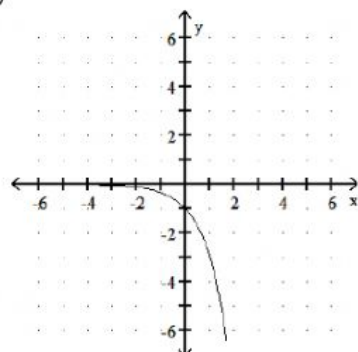
C)



B)

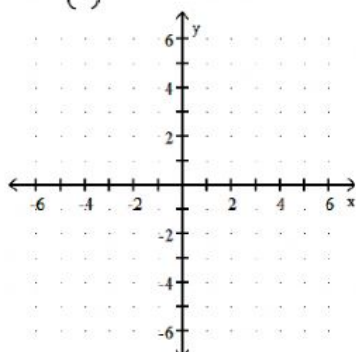


D)

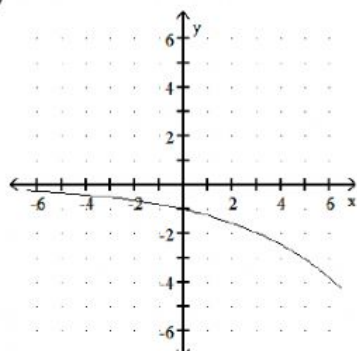


5) $f(x) = \left(\frac{5}{4}\right)^x$

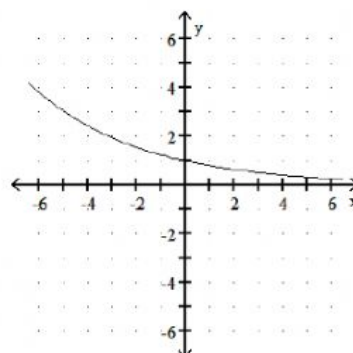
5) _____



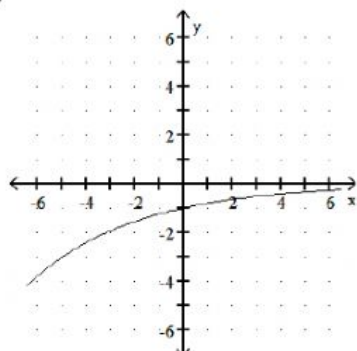
A)



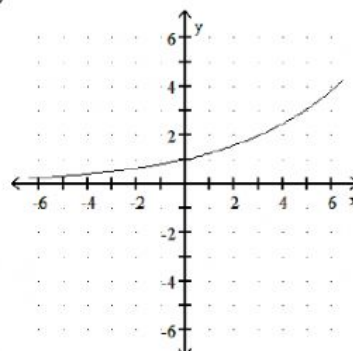
B)



C)



D)



Solve the equation.

6) $2^1 + 2x = 32$

A) {4}

B) {2}

C) {16}

D) {-2}

6) _____

7) $18^x = 1$

A) {1}

B) $\left\{\frac{1}{18}\right\}$

C) {0}

D) $\emptyset$

7) _____

8) $3^{-x} = \frac{1}{9}$

A) $\{2\}$

B) $\left\{\frac{1}{2}\right\}$

C) $\left\{\frac{1}{3}\right\}$

D) $\{-2\}$

8) _____

9) $2^{7-3x} = \frac{1}{4}$

A) $\{-3\}$

B) $\{1\}$

C) $\left\{\frac{1}{2}\right\}$

D) $\{3\}$

9) _____

10) $2^x = \frac{1}{16}$

A) $\left\{\frac{1}{4}\right\}$

B) $\{-4\}$

C) $\left\{\frac{1}{8}\right\}$

D) $\{4\}$

10) _____

11) $2^x = 16$

A) $\{5\}$

B) $\{4\}$

C) $\{8\}$

D) $\{3\}$

11) _____

12) $4(3x - 7) = 16$

A) $\{4\}$

B) $\{-3\}$

C) $\{3\}$

D) $\left\{\frac{1}{4}\right\}$

12) _____

13) $\left(\frac{1}{6}\right)^x = 216$

A) $\{-3\}$

B) $\{3\}$

C) $\left\{-\frac{1}{3}\right\}$

D) $\left\{\frac{1}{3}\right\}$

13) _____

14) $2^{x^2-3} = 64$

A) $\{6\}$

B) $\{3\}$

C) $\{\sqrt{35}, -\sqrt{35}\}$

D) $\{3, -3\}$

14) _____

15) $(e^x)^x \cdot e^{45} = e^{14x}$

A) $\{-9, -5\}$

B) $\{9\}$

C) $\{9, 5\}$

D) $\{5\}$

15) _____

Change the exponential expression to an equivalent expression involving a logarithm.

16) $4^2 = x$

A) $\log_x 4 = 2$

B) $\log_4 2 = x$

C) $\log_2 x = 4$

D) $\log_4 x = 2$

16) _____

17) $e^x = 9$

A) $\ln x = 9$

B) $\ln 9 = x$

C) $\log_x e = 9$

D) $\logg x = e$

17) _____

Change the logarithmic expression to an equivalent expression involving an exponent.

18) $\log_4 x = 2$

A) $4^2 = x$

B) $x^2 = 4$

C) $4^x = 2$

D) $2^4 = x$

18) _____

19) $\log_2 16 = x$

A) $16^x = 2$

B) $x^2 = 16$

C) $16^2 = x$

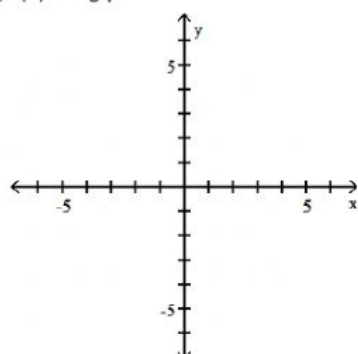
D) $2^x = 16$

19) _____

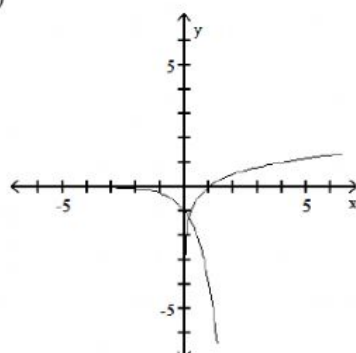
Graph the function and its inverse on the same Cartesian plane.

20) $f(x) = \log_4 x$

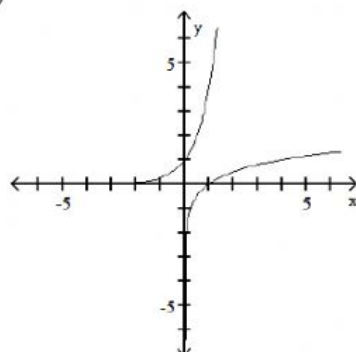
20) _____



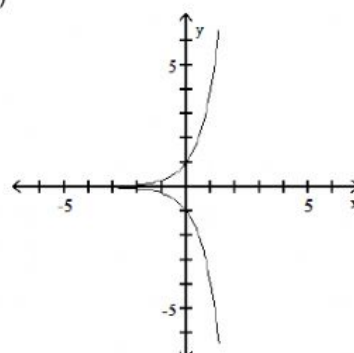
A)



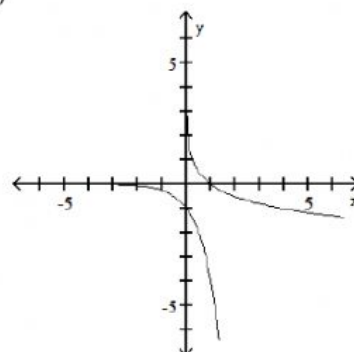
C)



B)

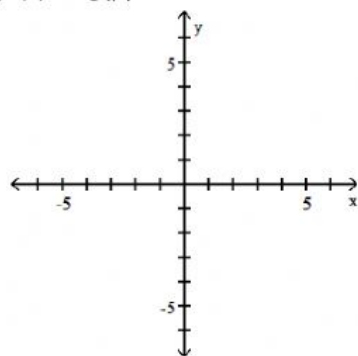


D)

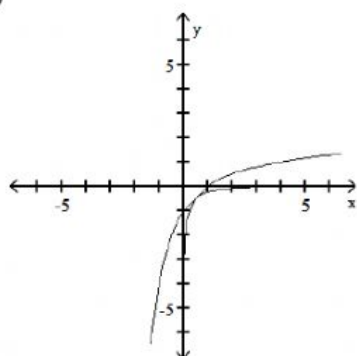


21) $f(x) = \log_{1/4} x$

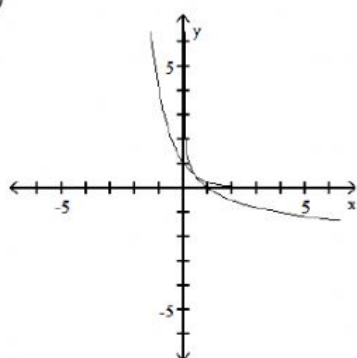
21) _____



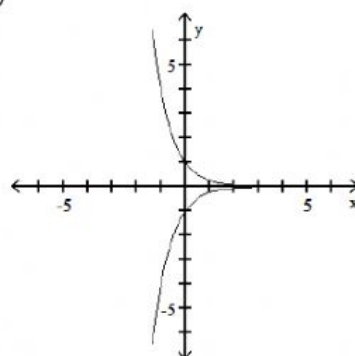
A)



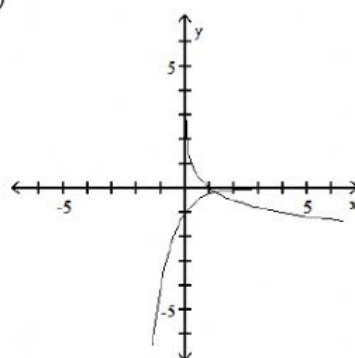
C)



B)



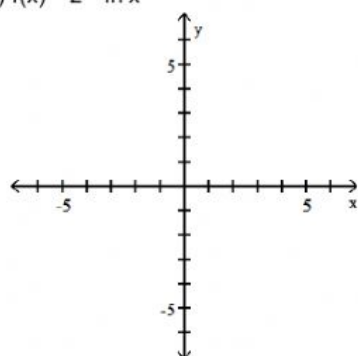
D)



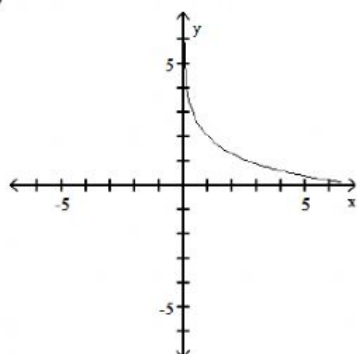
Graph the function.

22) $f(x) = 2 - \ln x$

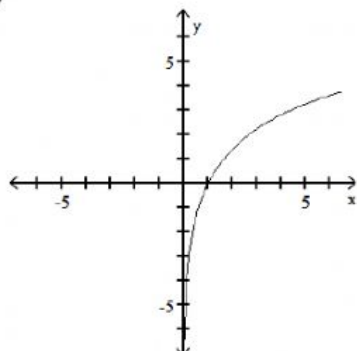
22) _____



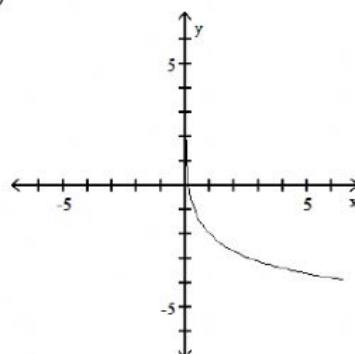
A)



C)



B)



D)

