

Factor out the greatest common factor.

1) $48m^9 + 18m^7 + 60m^4$

2) $4(x + 6)^3 + 2(x + 6)^5$

Factor completely.

3) $2x^2 - 16x + 32$

Evaluate the expression. Write answer without exponents.

4) 5^{-3}

5) $\left(\frac{1}{3}\right)^{-4}$

6) $64^{1/2}$

7) $-32^{1/5}$

8) $\left(\frac{8}{27}\right)^{2/3}$

Simplify the expression. Write answer with positive exponents.

9) $\frac{9^{16}}{9^{-4}}$

10) $2^{-7} \cdot 2^9$

Simplify the expression. Write answer with positive exponents. Variables are positive real numbers.

11) $\frac{y^{8/12}}{y^{2/12}}$

12) $(b^6)^{5/6}$

Rationalize the denominator. Assume all variables represent positive real numbers.

13) $\frac{\sqrt{3}}{\sqrt{5} + 7}$

Perform the indicated operations. Give the answer in lowest terms.

14) $\frac{2}{r} + \frac{4}{r+9}$

Simplify the complex fraction.

15) $\frac{4 + \frac{2}{x}}{\frac{x}{4} + \frac{1}{8}}$

Find the slope of the line, if it is defined.

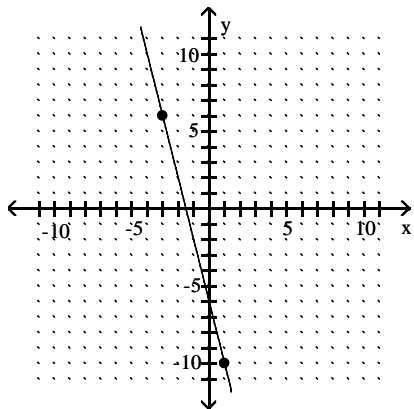
16) Through $(-1, -3)$ and $(-5, 9)$

Find the slope and the y-intercept of the line.

17) $4x - 5y = -35$

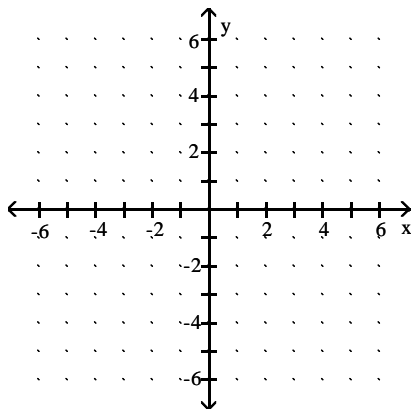
Identify whether the slope is positive, negative, zero, or undefined.

18)



Graph the linear function.

19) $f(x) = -4x + 6$



Graph:

20) $y = -6$

Find an equation of the the line satisfying the given conditions.

21) Through $(0, 3)$; $m = -\frac{2}{7}$

Write an equation in slope–intercept form for a line passing through the pair of points.

22) $(-3, -6)$ and $(6, 8)$

Find an equation of the the line satisfying the given conditions.

23) Through the origin with slope -9

Find the intersection point(s) of the graphs of the given equations.

24) $7x - 3y = 48$
 $6x + y = 9$

Solve the problem.

25) To produce x units of a vase costs $C(x) = 20x + 3000$; revenue is $R(x) = 30x$, where $C(x)$ and $R(x)$ are in dollars.
Find the break–even point.

Evaluate the function.

26) Find $f(-3)$ when $f(x) = x^2 + 5x - 7$

27) Find $f(2-k)$ when $f(x) = x^2 - 3x$.

Solve the equation.

28) $4m^2 + 8m + 2 = 0$

Use factoring to solve the equation.

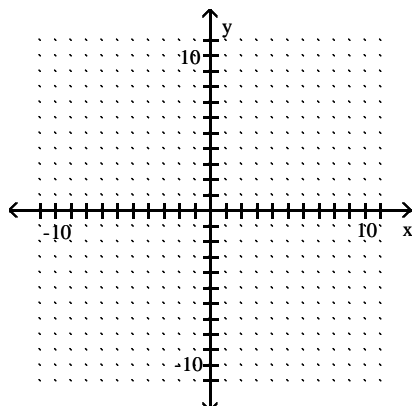
29) $15y^2 + 19y + 6 = 0$

Find the vertex and axis of the parabola.

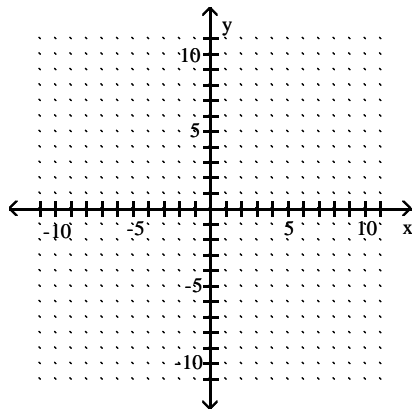
30) $f(x) = x^2 - 20x + 106$

Graph the parabola.

31) $y = 4(x - 5)^2 - 2$

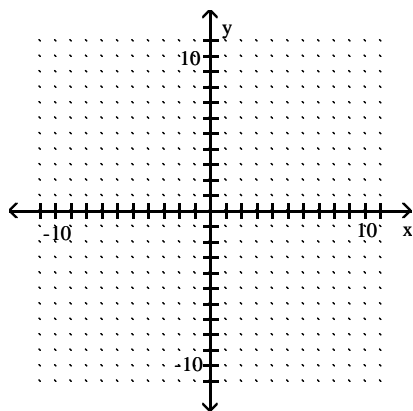


32) $f(x) = -x^2 - 2x + 1$



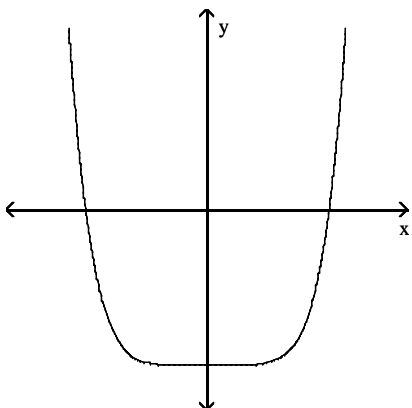
Graph the polynomial function.

33) $f(x) = -x^3 + x^2$



Solve the problem.

- 34) The graph of a function is given below. Tell whether the graph could possibly be the graph of a polynomial function. If it could be the graph of a polynomial function, tell which of the following are possible degrees for the polynomial function: 3, 4, 5, 6.



Give the equation of the vertical asymptote(s) of the rational function.

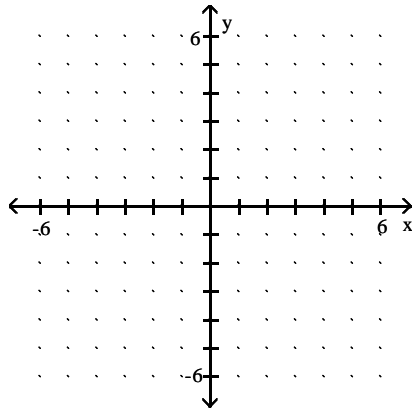
35) $g(x) = \frac{x + 6}{x^2 + 4x - 21}$

Give the equation of the horizontal asymptote of the rational function.

$$36) g(x) = \frac{9 - 4x}{4x + 1}$$

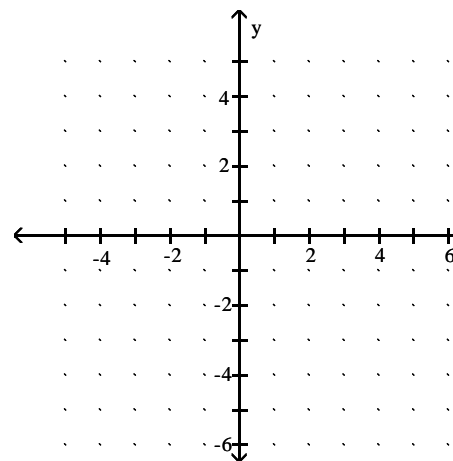
Graph the rational function.

$$37) f(x) = \frac{-3}{(x - 2)^2}$$



Graph the function.

$$38) f(x) = 4^x$$



Solve the problem.

39) The sales of a mature product (one which has passed its peak) will decline by the function $S(t) = S_0 e^{-at}$, where t is time in years. Find the sales after 13 years if $a = 0.15$ and $S_0 = 94,400$.

Convert to exponential form.

$$40) \log_5 \frac{1}{125} = -3$$

Write in logarithmic form.

$$41) 64^{1/6} = 2$$

Find the value of the expression.

$$42) \log_4 \frac{1}{4}$$

$$43) \ln e$$

Write the expression as a single logarithm.

$$44) \log 6 + 2 \log r - 4 \log s$$

Answer Key

Testname: TEST1RVW062

1) $6m^4(8m^5 + 3m^3 + 10)$

2) $2(x + 6)^3(x^2 + 12x + 38)$

3) $2(x - 4)(x - 4)$

4) $\frac{1}{125}$

5) 81

6) 8

7) -2

8) $\frac{4}{9}$

9) 9^{20}

10) 2^2

11) $y^{1/2}$

12) b^5

13) $\frac{7\sqrt{3} - \sqrt{15}}{44}$

14) $\frac{6r + 18}{r(r + 9)}$

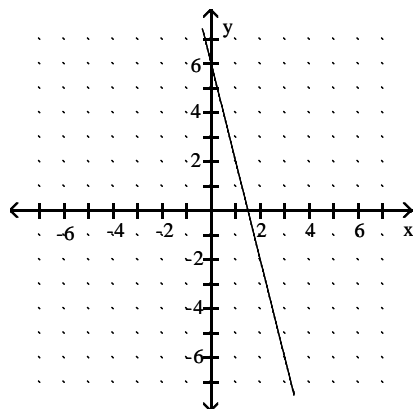
15) $\frac{16}{x}$

16) -3

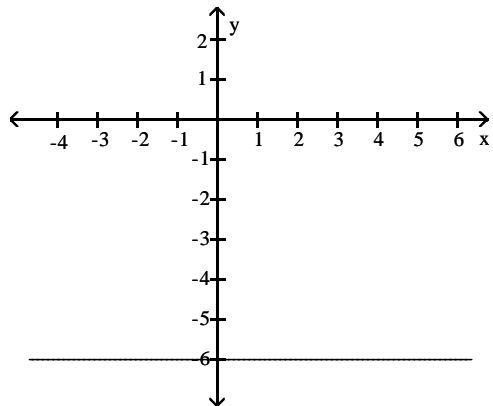
17) $m = \frac{4}{5}; b = 7$

18) Negative

19)



20)



21) $y = -\frac{2}{7}x + 3$

22) $y = \frac{14}{9}x - \frac{4}{3}$

23) $y = -9x$

24) $(3, -9)$

25) $(300, 9000)$

26) -13

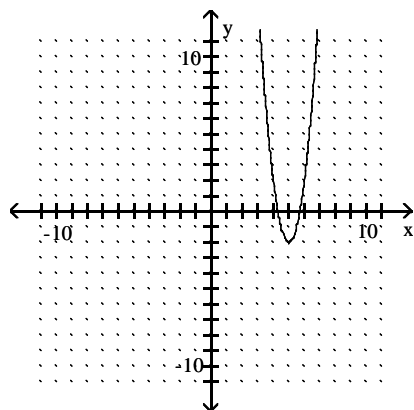
27) $k^2 - k - 2$

28) $\frac{-2 \pm \sqrt{2}}{2}$

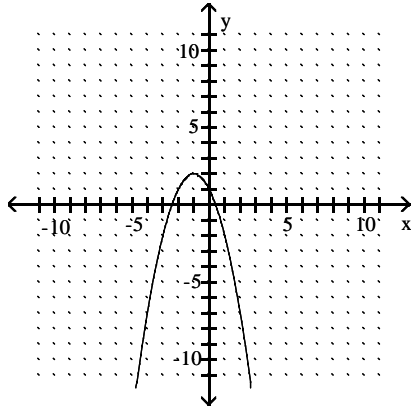
29) $-\frac{3}{5}, -\frac{2}{3}$

30) $(10, 6); x=10$

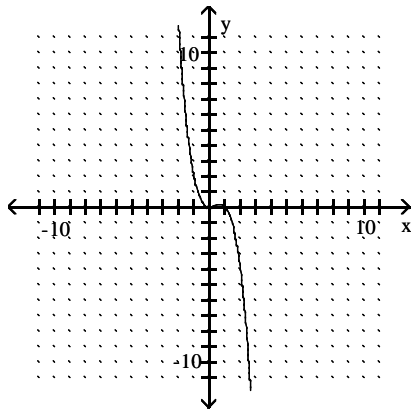
31)



32)



33)

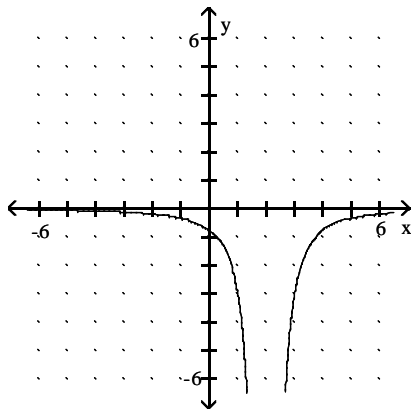


34) yes; 4, 6

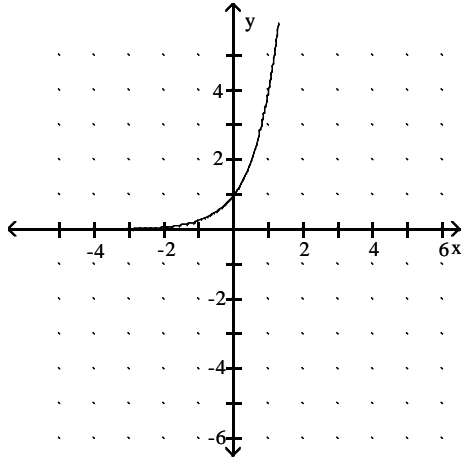
35) $x = -7$, $x = 3$

36) $y = -1$

37)



38)



39) 13,431

40) $5^{-3} = \frac{1}{125}$

41) $\frac{1}{6} = \log_{64} 2$

42) -1

43) 1

44) $\log \frac{6r^2}{s^4}$