

Answer on the scantran.

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

Solve the equation.

1)  $x^4 - 8x^2 - 9 = 0$

A)  $\{3i, -3i, i, -i\}$

B)  $\{3, -3, i, -i\}$

C)  $\{3, -3, 1, -1\}$

D)  $\{1, -1, 3i, -3i\}$

2)  $\sqrt{4a - 5} - \sqrt{2a + 8} = 0$

A)  $\left\{\frac{13}{6}\right\}$

B)  $\left\{\frac{2}{13}\right\}$

C)  $\left\{\frac{3}{2}\right\}$

D)  $\left\{\frac{13}{2}\right\}$

3)  $1 + \frac{1}{x} = \frac{90}{x^2}$

A)  $\{-10, 9\}$

B)  $\left\{-\frac{1}{10}, \frac{1}{9}\right\}$

C)  $\{-9, 10\}$

D)  $\{9, 10\}$

4)  $4(7 + 3x) = \frac{1}{16}$

A)  $\{3\}$

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

C)  $\{4\}$

D)  $\{-3\}$

Write in logarithmic form.

5)  $3^2 = 9$

A)  $\log_3 9 = 2$

B)  $\log_3 2 = 9$

C)  $\log_9 3 = 2$

D)  $\log_2 9 = 3$

Use the quadratic formula to solve the equation.

6)  $2x^2 = -5x - 7$

A)  $\left\{\frac{-5 + i\sqrt{31}}{4}, \frac{-5 - i\sqrt{31}}{4}\right\}$

B)  $\left\{\frac{5 + \sqrt{31}}{4}, \frac{5 - \sqrt{31}}{4}\right\}$

C)  $\left\{\frac{5 + i\sqrt{31}}{4}, \frac{5 - i\sqrt{31}}{4}\right\}$

D)  $\left\{\frac{-5 + \sqrt{31}}{4}, \frac{-5 - \sqrt{31}}{4}\right\}$

Simplify the expression involving rational exponents.

7)  $\left(-\frac{27}{64}\right)^{-4/3}$

A)  $\frac{256}{81}$

B)  $\frac{81}{256}$

C) Not a real number

D)  $-\frac{81}{256}$

Solve the problem.

8) An airplane travels 700 miles against the wind in 5 hours, and makes the return trip with the same wind in 2 hours. Find the rate of the wind.

A) 245 mph

B) 105 mph

C) 140 mph

D) 350 mph

9) Find  $f(4)$  when  $f(x) = x^2 + 2x - 7$ .

A) 31

B) 1

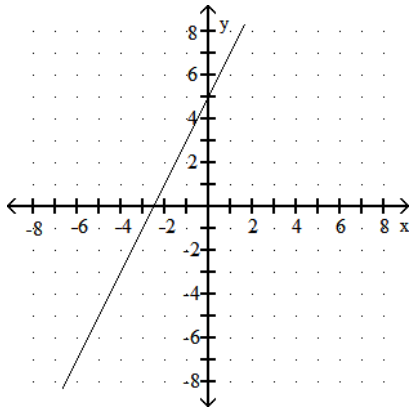
C) 15

D) 17

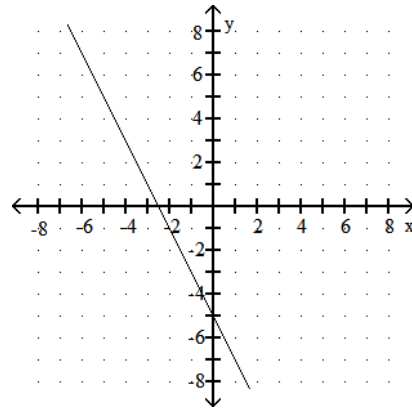
Choose the graph that matches the equation.

10)  $y = -2x - 5$

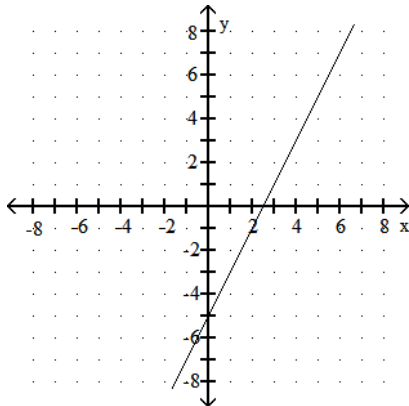
A)



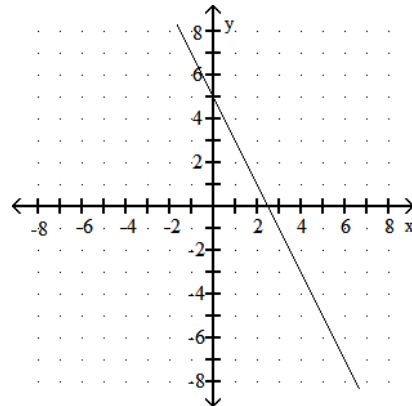
B)



C)



D)



Simplify the expression so that no negative exponents appear in the final result. Assume all variables represent nonzero numbers.

11)  $\left(\frac{2x^3y^{-3}}{x^{-2}y^4}\right)^{-3}$

A)  $\frac{y^{21}}{2x^{15}}$

B)  $\frac{y^{21}}{8x^{15}}$

C)  $\frac{2x^{15}}{y^{21}}$

D)  $\frac{y^{21}}{2x^5}$

Find an equation of the line satisfying the conditions. Write the equation in slope-intercept form.

12) Through  $(-3, 8)$ ; perpendicular to  $-3x + 4y = -23$

A)  $y = -\frac{4}{3}x + 4$

B)  $y = -\frac{3}{4}x + \frac{23}{4}$

C)  $y = \frac{3}{4}x + \frac{41}{4}$

D)  $y = \frac{4}{3}x + 12$

Provide an appropriate response.

13) Use a property of logarithms to evaluate  $\log_7 7^{21}$ .

A)  $\frac{1}{7}$

B) 7

C)  $\frac{1}{21}$

D) 21

Express as a product.

14)  $\log_b 3^9$

A)  $9 \log_b 3^9$

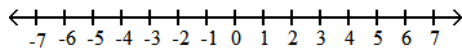
B)  $b \log_{90} 3^9$

C)  $9 \log_b 3$

D)  $b \log_9 3$

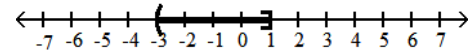
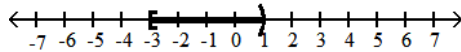
Solve the inequality. Give the solution set in both interval and graph forms.

15)  $2 < -3x + 5 \leq 14$



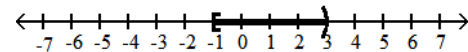
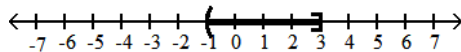
A)  $[-3, 1)$

B)  $(-3, 1]$



C)  $(-1, 3]$

D)  $[-1, 3)$



Add or subtract as indicated. Write the answer in lowest terms.

16)  $\frac{2}{y^2 - 3y + 2} + \frac{7}{y^2 - 1}$

A)  $\frac{9y - 12}{(y - 1)(y - 2)}$

B)  $\frac{28y - 12}{(y - 1)(y + 1)(y - 2)}$

C)  $\frac{12y - 9}{(y - 1)(y + 1)(y - 2)}$

D)  $\frac{9y - 12}{(y - 1)(y + 1)(y - 2)}$

Decide whether the relation is a function.

17)  $\{(-6, -3), (-3, -7), (4, 5), (5, 7)\}$

A) Function

B) Not a function

Solve the mixture problem.

18) A merchant has coffee worth \$3 a pound that she wishes to mix with 50 pounds of coffee worth \$9 a pound to get a mixture worth \$8 a pound. How many pounds of the \$3 coffee should be used?

A) 30 lb

B) 10 lb

C) 5 lb

D) 60 lb

Identify the vertex of the given parabola.

19)  $f(x) = (x - 4)^2 - 4$

A)  $(4, -4)$

B)  $(-4, 0)$

C)  $(0, -4)$

D)  $(4, 4)$

Find  $(f \circ g)(x)$  for the given functions  $f(x)$  and  $g(x)$ .

20)  $f(x) = 5x + 5$  and  $g(x) = x^2 - 2$

A)  $x^2 + 5x + 3$

B)  $x^2 - 5x - 7$

C)  $25x^2 + 10x - 5$

D)  $5x^2 - 5$