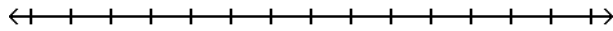


Solve the linear inequality.

1)  $-4(2x + 3) < -12x + 12$

1) \_\_\_\_\_



A)  $(-\infty, 6]$

B)  $(-\infty, -0]$

C)  $(-\infty, 6)$

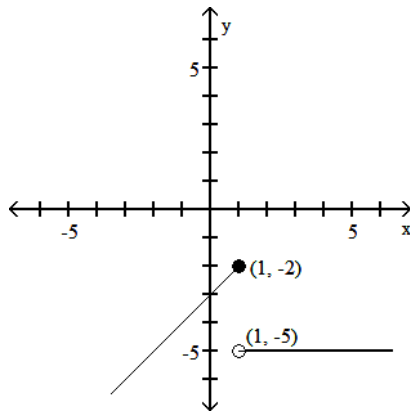
D)  $(6, \infty)$

Graph the function.

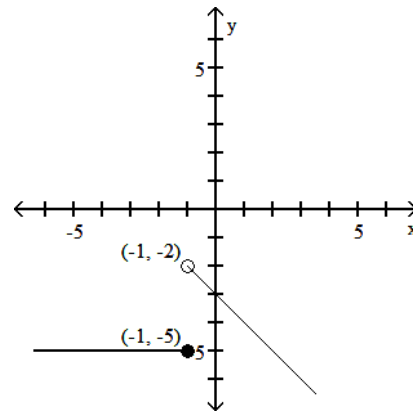
2)  $f(x) = \begin{cases} x - 3 & \text{if } x < 1 \\ -5 & \text{if } x \geq 1 \end{cases}$

2) \_\_\_\_\_

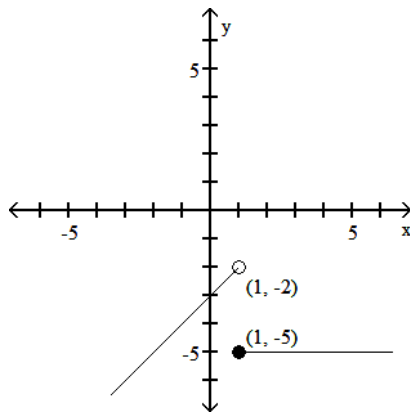
A)



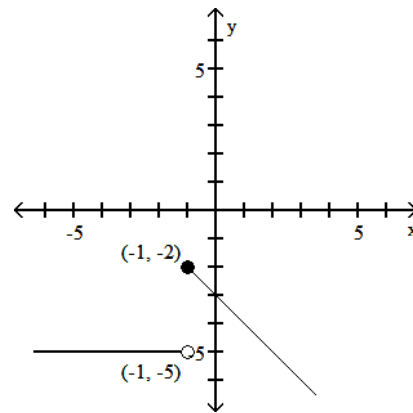
B)



C)



D)



Find and simplify the difference quotient  $\frac{f(x+h) - f(x)}{h}$ ,  $h \neq 0$  for the given function.

3)  $f(x) = 2x + 9$

3) \_\_\_\_\_

A) 0

B) 2

C)  $2 + \frac{4(x+9)}{h}$

D)  $2 + \frac{18}{h}$

Determine the slope and the y-intercept of the graph of the equation.

4)  $x + 7y - 1 = 0$

4) \_\_\_\_\_

A)  $m = -7; (0, 7)$

B)  $m = \frac{1}{7}; \left(0, \frac{1}{7}\right)$

C)  $m = -\frac{1}{7}; \left(0, \frac{1}{7}\right)$

D)  $m = 1; (0, 1)$

Use the given conditions to write an equation for the line in point-slope form. Hint:  $y - y_1 = m(x - x_1)$

5) Slope = 4, passing through (-2, 5)

A)  $y + 5 = 4(x - 2)$

B)  $x - 5 = 4(y + 2)$

C)  $y = 4x + 13$

D)  $y - 5 = 4(x + 2)$

5) \_\_\_\_\_

Given functions  $f$  and  $g$ , determine the domain of  $f + g$ .

6)  $f(x) = 5x + 5$ ,  $g(x) = \frac{3}{x - 6}$

A)  $(-\infty, -3)$  or  $(-3, \infty)$

B)  $(0, \infty)$

C)  $(-\infty, \infty)$

D)  $(-\infty, 6)$  or  $(6, \infty)$

6) \_\_\_\_\_

For the given functions  $f$  and  $g$ , find the indicated composition.

7)  $f(x) = 9x^2 - 5x$ ,  $g(x) = 15x - 10$

$(f \circ g)(2)$

A) 3120

B) 3500

C) 520

D) 380

7) \_\_\_\_\_

8)  $f(x) = 5x + 14$ ,  $g(x) = 4x - 1$

$(f \circ g)(x)$

A)  $20x + 13$

B)  $20x + 55$

C)  $20x + 9$

D)  $20x + 19$

8) \_\_\_\_\_

Find the inverse of the one-to-one function.

9)  $f(x) = \frac{5}{3x + 7}$

A)  $f^{-1}(x) = \frac{5}{3y} - \frac{7}{3}$

B)  $f^{-1}(x) = \frac{7}{3} - \frac{5}{3x}$

C)  $f^{-1}(x) = \frac{3x + 7}{5}$

D)  $f^{-1}(x) = \frac{5}{3x} - \frac{7}{3}$

9) \_\_\_\_\_

Write the standard form of the equation of the circle with the given center and radius.

10)  $(10, 2)$ ;  $\sqrt{10}$

A)  $(x - 10)^2 + (y - 2)^2 = 10$

B)  $(x + 10)^2 + (y + 2)^2 = 10$

C)  $(x + 2)^2 + (y + 10)^2 = 100$

D)  $(x - 2)^2 + (y - 10)^2 = 100$

10) \_\_\_\_\_

Find the center and the radius of the circle.

11)  $(x - 7)^2 + (y + 7)^2 = 49$

A)  $(-7, 7)$ ,  $r = 7$

B)  $(, -7)$ ,  $r = 7$

C)  $(-7, 7)$ ,  $r = 49$

D)  $(, -7)$ ,  $r = 49$

11) \_\_\_\_\_

Determine whether the given quadratic function has a minimum value or maximum value. Then find the coordinates of the minimum or maximum point.

12)  $f(x) = -x^2 - 2x - 8$

A) maximum;  $(-7, -1)$

B) minimum;  $(-7, -1)$

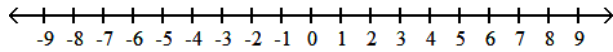
C) minimum;  $(-1, -7)$

D) maximum;  $(-1, -7)$

12) \_\_\_\_\_

Solve the rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

13)  $\frac{x-3}{x+9} < 0$  13) \_\_\_\_\_



- A)  $(-9, 3)$  B)  $(-\infty, -9)$   
 C)  $(3, \infty)$  D)  $(-\infty, -9)$  or  $(3, \infty)$

Use the compound interest formulas  $A = P\left(1 + \frac{r}{n}\right)^{nt}$  to solve.

14) Find the accumulated value of an investment of \$5000 at 5% compounded monthly for 8 years. 14) \_\_\_\_\_  
 A) \$9093.60 B) \$8060.16 C) \$7452.93 D) \$12,911.25

Write the equation in its equivalent exponential form.

15)  $\log_5 125 = 3$  15) \_\_\_\_\_  
 A)  $5^{125} = 3$  B)  $3^5 = 125$  C)  $5^3 = 125$  D)  $125^3 = 5$

Write the equation in its equivalent logarithmic form.

16)  $15^3 = y$  16) \_\_\_\_\_  
 A)  $\log_3 y = 15$  B)  $\log_{15} y = 3$   
 C)  $\log_y 3 = 15$  D)  $\log_y 15 = 3$

Use properties of logarithms to expand the logarithmic expression as much as possible. Where possible, evaluate logarithmic expressions.

17)  $\log_{15} \left( \frac{7\sqrt{16}}{n^2m} \right)$  17) \_\_\_\_\_  
 A)  $\frac{1}{7} \log_{15} 16 - 2 \log_{15} n - \log_{15} m$  B)  $7 \log_{15} 16 - 2 \log_{15} n - \log_{15} 7$   
 C)  $\log_{15} 16 - \log_{15} n - \log_{15} m$  D)  $\frac{1}{7} \log_{15} 16 - 2 \log_{15} n - 2 \log_{15} m$

Solve the exponential equation. Use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

18)  $2^{7x} = 4.6$  18) \_\_\_\_\_  
 A) 0.31 B) 15.41 C) 0.39 D) 12.91

Solve the system by the addition method.

19)  $6y = 63 - 7x$  19) \_\_\_\_\_  
 $2x = 78 - 6y$   
 A)  $\{(7, -14)\}$  B)  $\{(-3, 14)\}$  C)  $\{(6, -14)\}$  D)  $\emptyset$

Solve the system of equations.

20)  $x + y + z = 0$

$x - y + 4z = 11$

$3x + y + z = -4$

A)  $\{(-1, -2, 3)\}$

B)  $\{(3, -1, -2)\}$

C)  $\{(3, -2, -1)\}$

D)  $\{(-2, -1, 3)\}$

20) \_\_\_\_\_

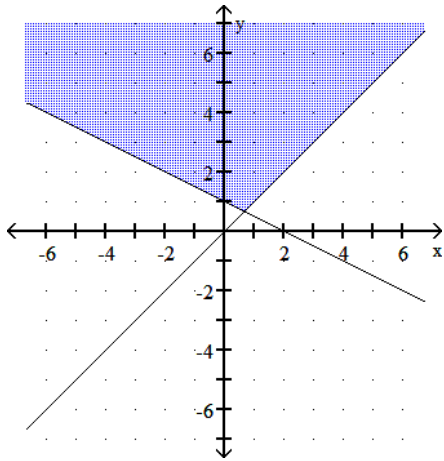
Graph the solution set of the system of inequalities or indicate that the system has no solution.

21)  $x + 2y \geq 2$

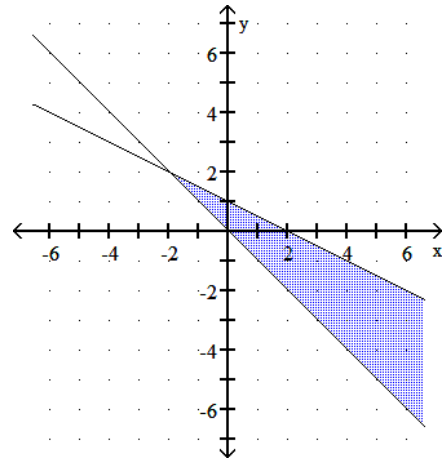
$x - y \leq 0$

21) \_\_\_\_\_

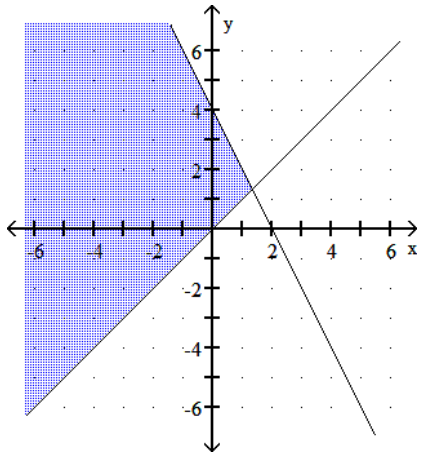
A)



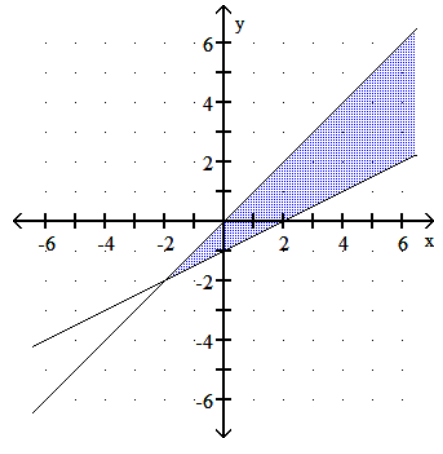
B)



C)



D)



Answer Key

Testname: FINAL\_REVIEW\_MAC1105

- 1) C
- 2) C
- 3) B
- 4) C
- 5) D
- 6) D
- 7) B
- 8) C
- 9) D
- 10) A
- 11) B
- 12) D
- 13) A
- 14) C
- 15) C
- 16) B
- 17) A
- 18) A
- 19) B
- 20) D
- 21) A