HOUSTON COMMUNITY COLLEGE

Final Exam Review
Math 0310: Basic Concepts for Business Math and Statistics

INSTRUCTIONS: This set of problems is meant to help you practice the kind of material that may appear on your final exam and does not represent exactly what your final will look like. There may be questions on your final that are unike questions on this review and vice versa. No question on the review will be duplicated exactly on the final. Your final will consist of 33 multiple choice questions, so you should bring a scantron with you on the day of your final exam.

FINAL EXAM CALCULATOR POLICY: You are allowed to use a basic calculator during the final exam. You are NOT allowed to use a scientific or graphing calculator. Any calculator that is used must be a nonprogrammable calculator that is not capable of accessing the internet or interfacing with any other device, has a single line display, and has math operation keys that do not exceed addition, subtraction, multiplication, division, square root, percent, and negation (plus/minus). Using a smartphone as a calculator is strictly forbidden.

1) Divide polynomials and simplify the answer.

$$\frac{70x^5 + 56x^2 - 21x}{7x}$$

2) Divide polynomials and simplify the answer.

$$\frac{30x^7 - 25x^4}{-5x^7}$$

3) Perform the operation and write the solution in the lowest term.

$$\frac{3}{35} \div \frac{2}{15}$$

4) Use the distributive property and combine like terms to simplify the expression.

$$-\frac{2}{3}(z - 13) - \frac{1}{6}z$$

5) Use the order of operations to simplify the expression.

$$\frac{3}{4} + |7 - 12| \cdot 3$$

6) Subtract the matrices.

$$\begin{bmatrix} -1 & 0 \\ 3 & 2 \end{bmatrix} - \begin{bmatrix} -1 & 3 \\ 3 & 1 \end{bmatrix}$$

7) Write the equation of the line passing through the given point with the given slope in slope-intercept form.
(5, 5); m = - 3

8) Perform the operation and write the solution in the lowest term.

$$\frac{4}{7} \cdot \frac{35}{48}$$

9) Find the cardinal number for the set.
$B = \{x | x \in N \text{ and } 1 \leq x < 9\}$

10) Add polynomials.
$(5y^5 - 6y^2 - 5) + (7y^5 + 9y^2 + 5)$

11) A standard deck of cards contains 52 cards. These cards consist of four suits (hearts, spades, clubs, and diamonds) of each of the following: 2, 3, 4, 5, 6, 7, 8, 9, 10, jack, queen, king, and ace. If a single card is drawn from a standard deck, find the probability of selecting a 3.

12) If the probability of winning a game is $\frac{6}{13}$, what is the probability of losing the game?

13) Use the order of operations to simplify the expression.
$4(-2)^2 - 30$

14) Simplify the square root.

$$\sqrt{\frac{81}{25}}$$

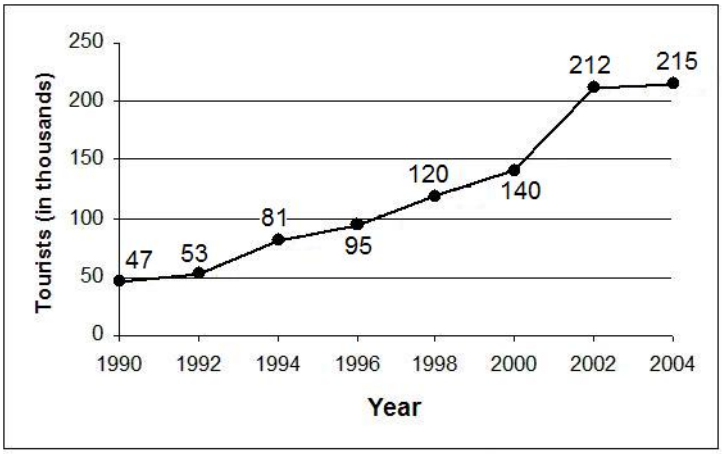
15) Find the mode.

-30 -25 -5 -19 -25 -1 -19 -33

16) Solve the system of equations using any method.

$$\begin{cases} 3x - 2y = -17 \\ y = x + 6 \end{cases}$$

17) In which year did the fewest tourists visit the town? How many tourists visited?

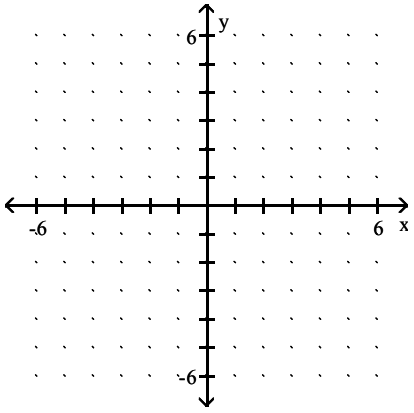


18) Solve the absolute value inequality and expression the solution set in interval notation.

$|4 - x| \leq 9$

19) Graph the exponential function.

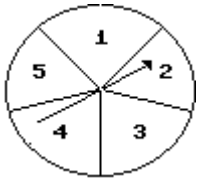
$y = 2^x$



20) Solve the equation.

$3(2n - 4) = 5(n + 4)$

21) The spinner shown is spun once. Find the probability that the spinner stops on 5 or 3.



22) Determine whether $y = 15$ is a solution to the proportion.

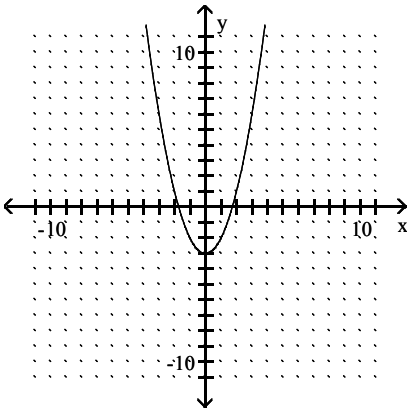
$$\frac{14.2}{29} = \frac{7.1}{y}$$

23) Find the mean, median and mode of the data set.
83, 75, 71, 71, 83, 85

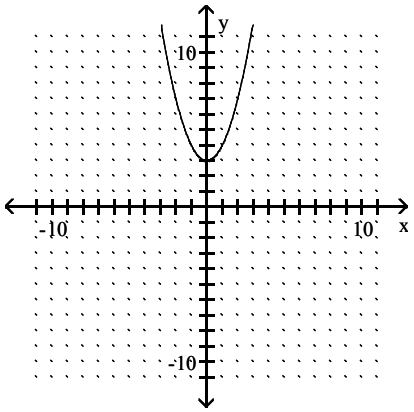
24) Find the decimal and fraction equivalent of the percent given in the sentence.
The unemployment rate in a certain city is 3.4%.

25) Match the quadratic function with its graph.
$f(x) = -x^2 + 3$

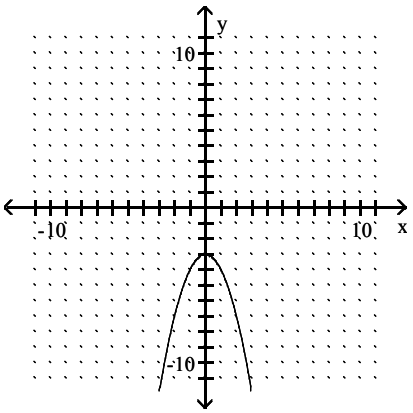
A)



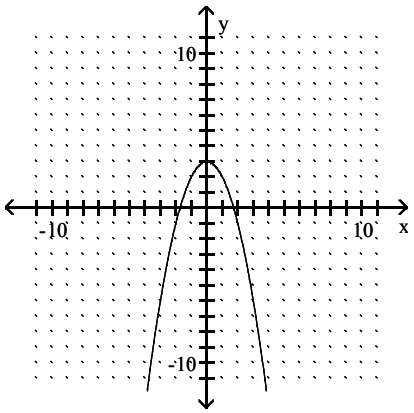
B)



C)



D)



26) Multiply polynomials.
$(x - 5)(-3x + 7)$

27) Multiply polynomials.
$2x^8(-5x^5)$

28) Simplify the exponential expression.
$\left(\frac{5x^3}{y^2}\right)^5$

29) Simplify the exponential expression.

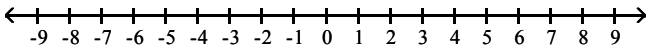
$$\frac{4x^{10}}{x^{6}}$$

30) Find the union.

{3, 5, 7, 13} ∪ {0, 3, 8, 13}

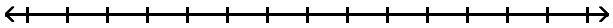
31) Solve the inequality. Graph the solution set and write it in interval notation.

$x + 3 > 7x - 3$



32) Solve the compound inequality. Graph the solution set and write it in interval notation.

$9 < 3x \leq 18$



33) A pair of shoes cost $56.75. If the sales tax rate is 7%, what is the total bill?

34) Let U = {q, r, s, t, u, v, w, x, y, z}, A = {q, s, u, w, y} and B = {q, s, y, z}.
Use roster method to write A ∩ B'.

35) Find the total amount for the investment using compound interest.

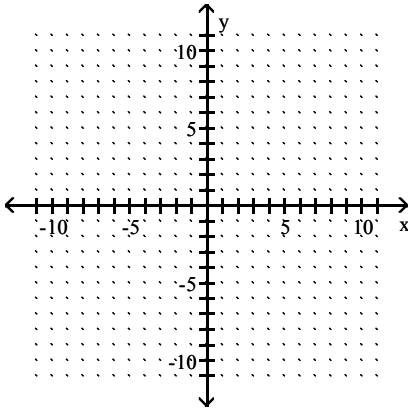
Principal	Annual Interest Rate	Length of the investment in Years	Compounded	Total Amount
$7000	7.5%	4	annually	

36) Add the fractions and write the solution in the lowest term.

$$\frac{7}{6} + \frac{3}{14}$$

37) Graph the inequality.

$2x + 5y > -10$



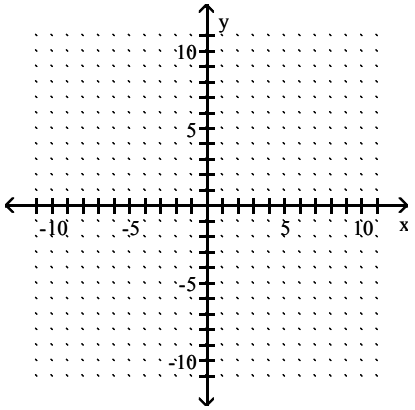
38) Moe borrowed $700 for 18 months at 4% simple interest.

a. How much interest will Moe have to pay?

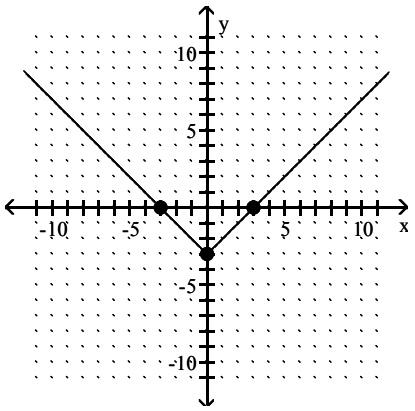
b. What will be the total amount he has to pay back?

39) Graph the linear equality.

$9y = 6x - 27$



40) Identify the intercepts.

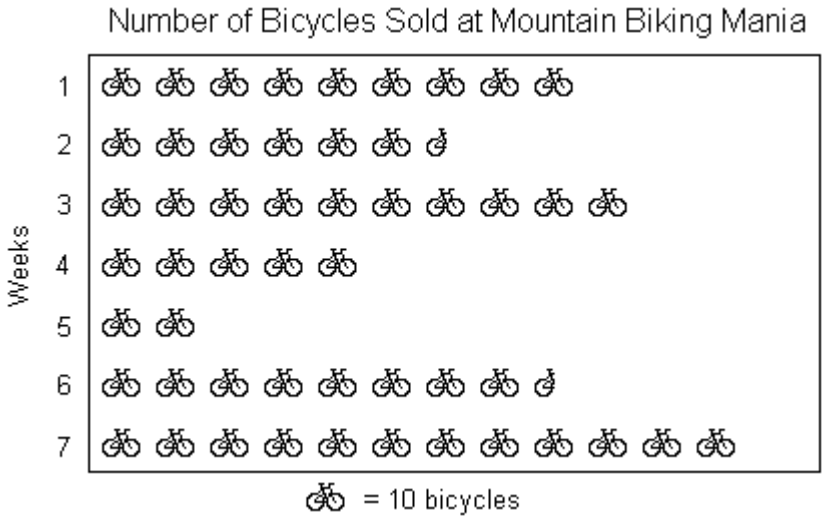


41) Solve the system of equations using any method.

$9x + 8y = 2$

$-2x - 8y = -44$

The pictograph shows the number of bicycles sold at Mountain Biking Mania for a 7-week period.



42) How many bicycles were sold in week 1?

43) Use the order of operations to simplify the expression.

$4[-5 + 3(-5 + 7)]$

44) Let $A = \begin{bmatrix} 9 & 7 & 2 \\ 6 & 8 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 9 & 3 \\ 8 & 6 & -2 \end{bmatrix}$. Find -3A - 5B.

45) Let $h(x) = x^3 - x$, find

a. h(-1) b. h(0) c. h(4)

46) Find the missing values.

Marked Price	Rate of Discount	Discount	Sale Price
$180	30%		

47) Find the number of proper subsets the set has. $\{m, n, p, q, r, s, t\}$

48) Find the intersection.

$\{e, f, g, h, i\} \cap \{h, i, j, k, l\}$

49) Solve the equation and find the value of x.

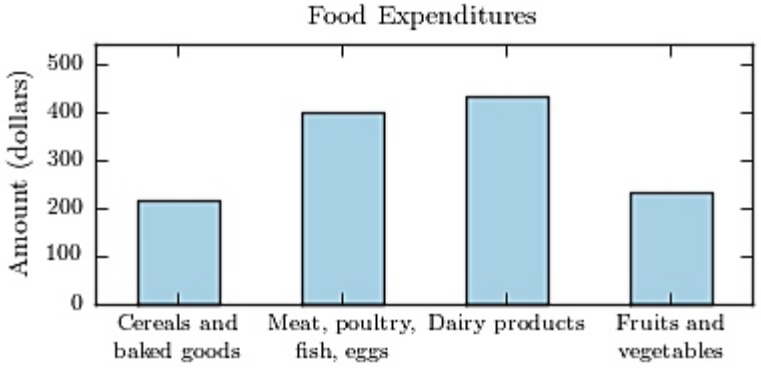
$\frac{2}{5}x - \frac{1}{3}x = 3$

50) Find the value of the exponential expression.

-6^3

51) The following bar graph presents the average amount a certain family spent, in dollars, on various food categories in a recent year.

On which food category was the most money spent?



52) Find the slope of the line that passes through the given points.

(-5, -12) and (3, 1)

53) Subtract polynomials.

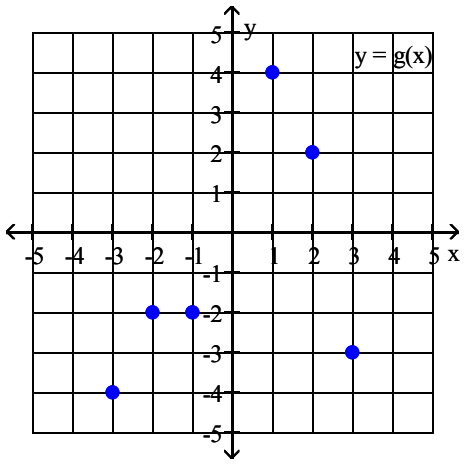
(-6x - 6) - (-13x + 9)

54) Solve the system of equations using any method.

$y = \frac{1}{5}x + 2$

$x - 5y = 7$

55) For what value(s) of x is $g(x) = 4$?



1) $10x^4 + 8x - 3$

2) $-6 + \frac{5}{x^3}$

3) $\frac{9}{14}$

4) $-\frac{5}{6}z + \frac{26}{3}$

5) $\frac{63}{4}$

6) $\begin{bmatrix} 0 & -3 \\ 0 & 1 \end{bmatrix}$

7) $y = -3x + 20$

8) $\frac{5}{12}$

9) 8

10) $12y^5 + 3y^2$

11) $\frac{1}{13}$

12) $\frac{7}{13}$

13) -14

14) $\frac{9}{5}$

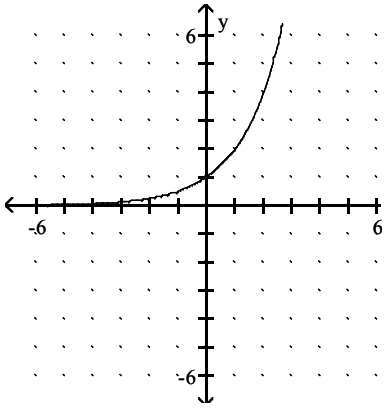
15) bimodal: -25, -19

16) (-5, 1)

17) In the year 1990 the fewest tourists visited the town. 47 thousand tourists visited.

18) [-5, 13]

19)



20) 32

21) $\frac{2}{5}$

22) no

23) mean: 78, median: 79, mode: 71 and 83

24) 0.034; $\frac{17}{500}$

25) D

26) $-3x^2 + 22x - 35$

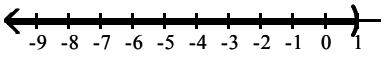
27) $-10x^{13}$

28) $\frac{3125x^{15}}{y^{10}}$

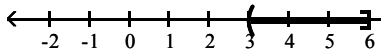
29) $4x^4$

30) {0, 3, 5, 7, 8, 13}

31) $(-\infty, 1)$



32) (3, 6]



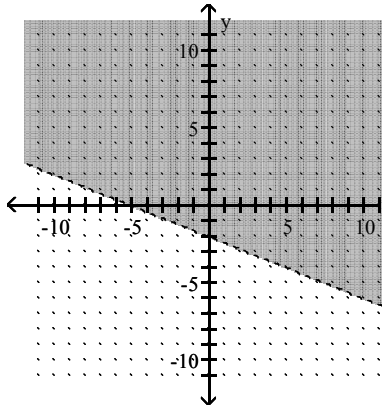
33) The total bill is $60.72.

34) {u, w}

35) $9348.28

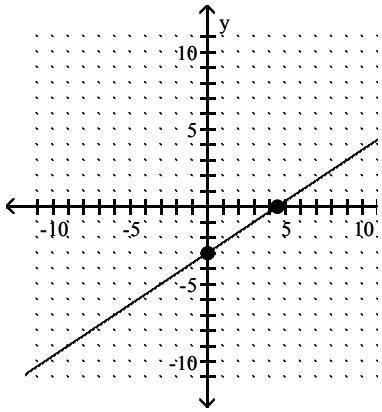
36) $\frac{29}{21}$

37)



38) a. $42.00 b. $742.00

39)



40) (3, 0), (-3, 0), (0, -3)

41) (-6, 7)

42) 90 bicycles

43) 4

44) $\begin{bmatrix} -52 & -66 & -21 \\ -58 & -54 & -17 \end{bmatrix}$

45) a. 0
b. 0
c. 60

46) $54.00, $126.00

47) 127

48) {h, i}

49) 45

50) -216

51) Dairy products

52) $\frac{13}{8}$

53) 7x - 15

54) No solution; { }; inconsistent system

55) $x = 1$