HOUSTON COMMUNITY COLLEGE
MATHEMATICS DEPARTMENT
SOUTHEAST COLLEGE

FINAL EXAM REVIEW ITEMS Math 0409: Foundations of Mathematics Revised: November 2016

Multiply.

1) $(9m + 10)^2$

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

3) $(6p - 1)(36p^2 + 6p + 1)$

4) $(2x - 9)(2x + 9)$

Solve. Clear decimals first.

5) $27.2y - 190.4 = 47.6y - 333.2$

Determine whether the following is a difference of squares.

6) $x^2 + 4$

Solve.

7) $F = \frac{9}{5}C + 32$ for C

8) Jim drove 168 mi in 4 hr. If he can keep the same pace, how long will it take him to drive 504 mi?

9) A car rental business rents a compact car at a daily rate of \$30.20 plus 20¢ per mile. Mike can afford to spend \$57 on the car rental for one day. How many miles can he drive and stay within his budget? (Hint: 20¢ = \$0.20)

10) $x = \frac{w + y + z}{8}$ for y

Find the slope of the line containing the two given points.

11) (-4, 8) and (-7, 8)

12) (6, 7) and (8, 8)

Find the slope of the line through the pair of points.

13) (–1, 3) and (–9, –3)

Collect like terms and then arrange in descending order.

14) $-9x^9 - 15x^2 + 5x^7 + 4x^9 - 12x^7$

Write the equation of the line with the given slope and y–intercept.

15) slope –5;
y–intercept (0, 2)

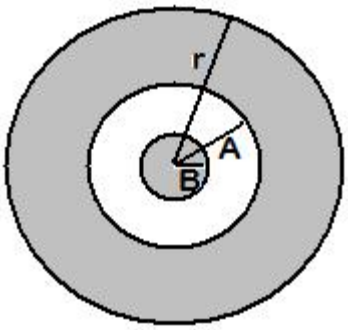
16) slope $\frac{6}{5}$;
y–intercept (0, –3)

Solve the problem.

17) If the first and third of three consecutive odd integers are added, the result is 87 less than five times the second integer. Find the third integer.

18) The sum of three consecutive integers is 528. Find the integers.

19) Find a polynomial for the sum of the shaded areas of the figure. A = 6, B = 4



20) A yard in the shape of a square measures 18 ft on each side. A triangular area with a height of 4 ft and a base of 9 ft is dug up for a flower bed. How much yard area is left over?

21) A square plywood platform has a perimeter which is 10 times the length of a side, decreased by 18. Find the length of a side.

Perform the indicated operation. Write the answer in scientific notation.

22) $\frac{9 \times 10^5}{3 \times 10^{-4}}$

23) $(5 \times 10^8)(7 \times 10^9)$

24) $9.18 \times 10^3 \div 2 \times 10^1$

Find the following.

25) Find $-(-x)$ when x is -69.

Simplify.

26) $\frac{4x^2 - 8x}{6x^2 - 12x}$

27) $7 + (-4) - (-18) - 1 + 20$

28) $\frac{2x + 2}{10x^2 + 16x + 6}$

29) $27 + (-51) - 18 - (-57) + (-79)$

30) $3\{[6(x - 1) + 3] - [2(3x - 1) + 3]\}$

31) $(-5 - 2)[3 + (8 + 2)]$

32) $\left(\frac{x^5}{y^5 z^4}\right)^2$

A) $\frac{x^7}{y^8 z^6}$ B) $\frac{x^{10}}{y^5 z^8}$

C) $\frac{x^8}{y^{10} z^8}$ D) $\frac{x^{10}}{y^{10} z^8}$

33) $3[-3 + 8(-3 + 5)]$

34) $(-24 - 9)(-18 - 5)$

Solve using the multiplication principle.

35) $-6a < \frac{1}{6}$

List the quadrant(s) in which the given point is located.

36) (17, -10)

37) The second coordinate is negative.

Factor completely.

38) $10a^3 + 15a^2b - 4ab^2 - 6b^3$

Factor.

39) $6x^2 - 6x - 36$

Factor completely.

40) $x^2 - x - 42$

41) $49x^2 - 36$

Factor.

42) One of the factors of $x^2 - 12x + 36$ is:

A) $(x + 6)^2$ B) $(x - 6)^2$

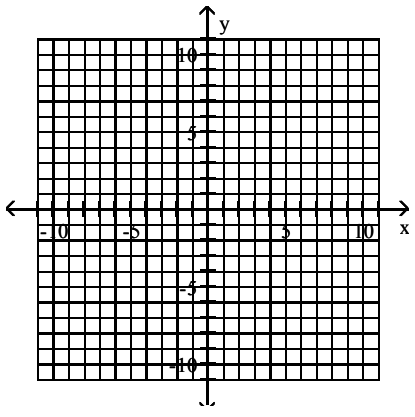
C) $(x + 6)(x - 6)$ D) Prime

Apply the product rule for exponents, if possible.

43) $(-3x^5y)(-4x^9y^2)$

Graph the linear inequality.

44) $2x - 6 > -3y$



Divide and simplify.

45) $\frac{z^{-7}}{z^{-5}}$

Solve the equation.

46) $7s + 12 = -8s$

47) $3(y + 8) - 4(y - 3) = 0$

Solve and check the linear equation.

48) $2x - 4 + 5(x + 1) = -2x - 3$

A) $\{-6\}$ B) $\{-\frac{4}{3}\}$

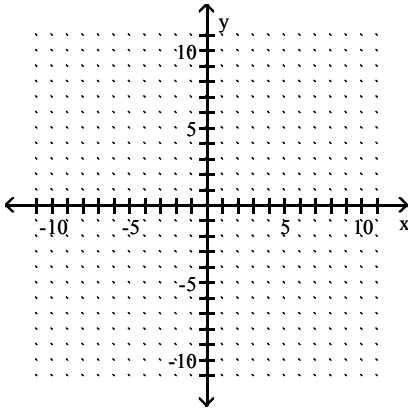
C) $\{-2\}$ D) $\{-\frac{4}{9}\}$

Divide and, if possible, simplify.

49) $\frac{3p - 3}{p} \div \frac{8p - 8}{3p^2}$

Graph the linear equation.

50) $7x - y = -7$



Subtract.

51) $(9x^5 + 20x^4 + 5) - (4x^4 + 6x^5 - 10)$

Convert to decimal notation.

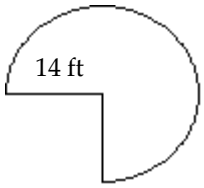
52) 6.398×10^5

Add or subtract as indicated.

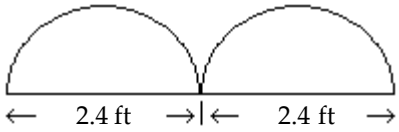
53) Subtract. $(3q^2 + 10q - 8) - (6q^2 + 8q + 5)$

Find the area of the figure. Use 3.14 for π.

54)

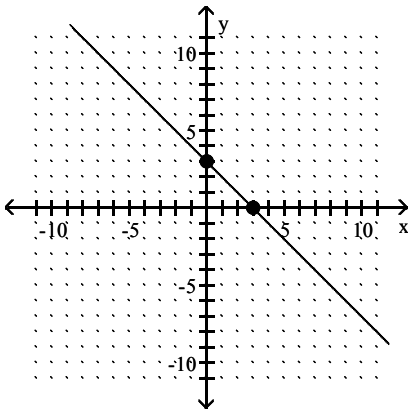


55)



Use the coordinates of the indicated points to find the slope of the line.

56)



Solve using the addition principle. Graph and write set–builder notation for the answer.

57) $9t + 2 \geq 8t + 3$

58) The sum of twice a number and 5 less than the number is the same as the difference between –17 and the number. What is the number?

A) –3 B) –2 C) –4 D) –6

59) Combine like terms:

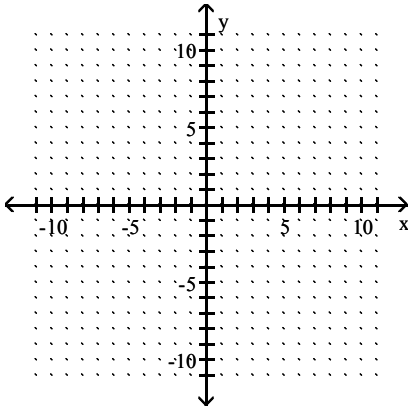
$10x - (-6x) - 12 - (-9x) + 6$

A) $-6 + 25x$ B) $4x + 15x$

C) $-6 - 25x$ D) $-6 - 25$

Graph the line containing the given pair of points.

60) (3, 3) (–4, 3)



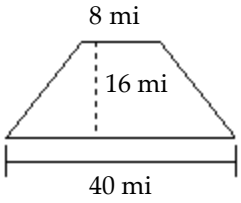
61) One of the factors of $x^2 - 5x - 36$ is:

A) $x + 4$ B) Prime

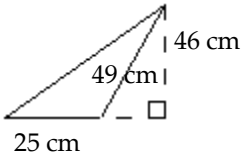
C) $x + 9$ D) $x + 1$

Find the area.

62)

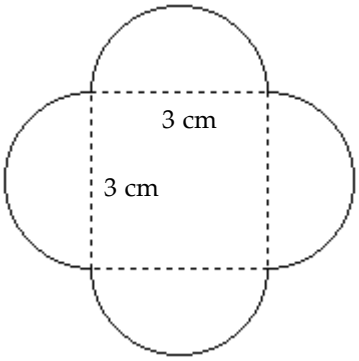


63)



Find the perimeter. Use 3.14 for π.

64)



Identify the polynomial as a monomial, binomial, trinomial, or none of these. Give its degree.

65) $-18y^4 + 9y^3 - 7$

Solve using the addition and multiplication principles.

66) $6y + 6 \leq 5y + 5$

67) $-2 - 10x + 1 \geq -11x - 10$

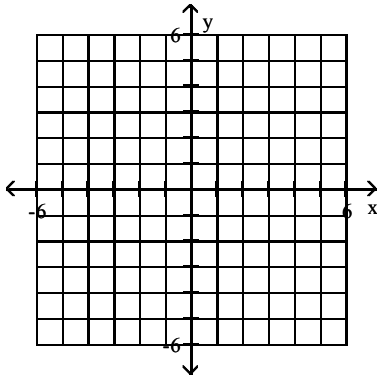
Multiply and simplify.

68) $x \cdot x^{-5}$

69) $5^9 \cdot 5^{-2}$

Plot the ordered pairs on the rectangular coordinate system provided.

70) A(2, 3), B(4, -4)



Find the union.

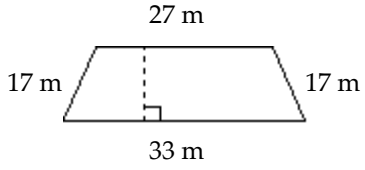
71) {e, f, g, h, i} ∪ {h, i, j, k, l}

Evaluate the polynomial.

72) $-2x^2 - 2x - 4$ for $x = -3$

Find the perimeter of the polygon.

73)



Factor.

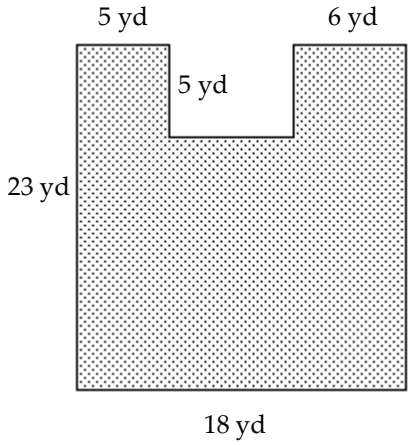
74) $2m(9 - m) + 7n(9 - m)$

Solve. Clear fractions or decimals first.

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

Find the area of the shaded region.

76)



Find the degree of the polynomial.

77) $x^6yz - x^8y^2 - 3x^5y^2z^3$

Divide.

78) $\frac{-18x^4 - 24x^3 - 18x^2}{-6x^3}$

Multiply and, if possible, simplify.

79) $\frac{k^2 + 10k + 21}{k^2 + 16k + 63} \cdot \frac{k^2 + 9k}{k^2 + 7k + 12}$

Find the intersection.

80) $\{0, 5, 8\} \cap \{4, 6, 8, 10\}$

Answer Key
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1) $81m^2 + 180m + 100$
Objective: (12.6) c: Square a Binomial

2) $16x^2 - 16x + 4$
Objective: (12.5) c: Multiply Two Binomials

3) $216p^3 - 1$
Objective: (12.5) d: Multiply Two Polynomials

4) $4x^2 - 81$
Objective: (12.5) c: Multiply Two Binomials

5) 7
Objective: (2.3) b: Solve Equation by Clearing Decimals

6) No
Objective: (5.5) c: Recognize Difference of Squares

7) $C = \frac{5}{9}(F - 32)$
Objective: (10.4) b: Solve Formula for Specified Letter

8) 12 hr
Objective: (7.4) a: Solve Apps: Solve Proportion I

9) 134 mi
Objective: (2.6) a: Solve Apps: Miscellaneous II

10) $y = 8x - w - z$
Objective: (10.4) b: Solve Formula for Specified Letter

11) 0
Objective: (7.3) b: Find Slope Between Two Points

12) $\frac{1}{2}$
Objective: (7.3) b: Find Slope Between Two Points

13) $\frac{3}{4}$
Objective: (3.3) Find Slope Given Two Points

14) $-5x^9 - 7x^7 - 15x^2$
Objective: (4.3) e: Collect Like Terms and Arrange in Descending Order

15) $y = -5x + 2$
Objective: (3.4) Write Equation Given Slope and y–Intercept

16) $y = \frac{6}{5}x - 3$
Objective: (3.4) Write Equation Given Slope and y–Intercept

17) 31
Objective: (10.6) a: Solve Apps: Numbers

18) 175, 176, 177
Objective: (10.6) a: Solve Apps: Numbers

19) $\pi r^2 - 20\pi$
Objective: (12.4) d: Use Polynomials to Represent Perimeter or Area

20) 306 ft^2
Objective: (6.3) c: Solve Apps: Area of Polygons

21) 3
Objective: (2.6) a: Solve Apps: Geometry

22) 3×10^9
Objective: (12.2) d: Multiply or Divide Using Scientific Notation

23) 3.5×10^{18}
Objective: (12.2) d: Multiply or Divide Using Scientific Notation

24) 4.59×10^2
Objective: (12.2) d: Multiply or Divide Using Scientific Notation

25) –69
Objective: (2.1) d: Find –x or –(–x) Given x

26) $\frac{2}{3}$
Objective: (6.1) c: Simplify Rational Expression by Factoring

27) 40
Objective: (1.4) a: Simplify Combination of Additions and Subtractions

28) $\frac{1}{5x + 3}$
Objective: (6.1) c: Simplify Rational Expression by Factoring

29) –64
Objective: (2.3) a: Simplify Combination of Additions/Subtractions

30) -12
Objective: (1.8) c: Simplify Expression with Nested Parentheses

31) –91
Objective: (1.8) d: Simplify Using Order of Operations

32) D
Objective: (12.2) a, b: Use Power Rule to Simplify Quotient

33) 39
Objective: (2.5) b: Simplify Using Order of Operations

34) 759
Objective: (1.8) d: Simplify Using Order of Operations

35) $\left\{a \middle| a > -\frac{1}{36}\right\}$
Objective: (10.7) d: Solve Inequality Using Multiplication Principle

36) IV
Objective: (3.1) a: Determine Quadrant of Point

37) III, IV
Objective: (3.1) a: Determine Quadrant of Point

38) $(5a^2 - 2b^2)(2a + 3b)$
Objective: (5.6) a: Factor Polynomial

39) $6(x + 2)(x - 3)$
Objective: (5.2) a: Factor Trinomial x^2 + bx + c

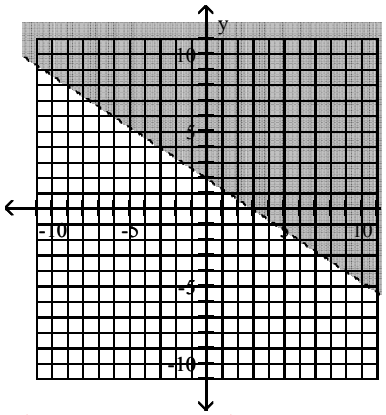
40) $(x + 6)(x - 7)$
Objective: (5.6) a: Factor Trinomial

41) $(7x + 6)(7x - 6)$
Objective: (5.5) d: Factor Difference of Squares

42) B
Objective: (13.5) b: Factor Trinomial Square

43) $12x^{14}y^3$
Objective: (5.1) Simplify Using Product Rule

44)



Objective: (3.5) Graph Linear Inequality

45) $\frac{1}{z^2}$
Objective: (12.1) e, f: Use Quotient Rule to Divide with Exponents

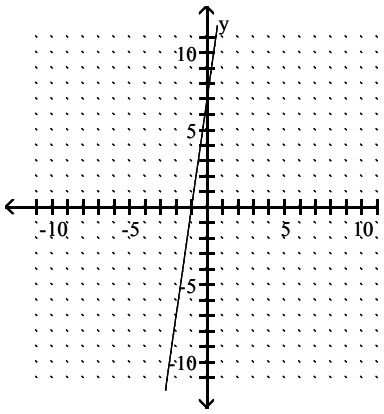
46) $\left\{-\frac{4}{5}\right\}$
Objective: (2.1) Solve Linear Equation in One Variable

47) {36}
Objective: (2.1) Solve Linear Equation in One Variable

48) D
Objective: (1.2) Solve Linear Equations in One Variable

49) $\frac{9p}{8}$
Objective: (6.2) b: Divide Rational Expressions

50)



Objective: (11.1) d: Graph Linear Equation

51) $3x^5 + 16x^4 + 15$
Objective: (12.4) c: Subtract Polynomials

52) 639,800
Objective: (12.2) c: Convert Scientific Notation to Decimal Notation

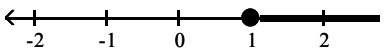
53) $-3q^2 + 2q - 13$
Objective: (5.2) Add or Subtract Polynomials (Vertical)

54) 461.58 ft^2
Objective: (6.4) d: Find Area of Composite Figure Including Circle

55) 4.5216 ft^2
Objective: (6.4) d: Find Area of Composite Figure Including Circle

56) –1
Objective: (3.3) Find Slope Given Graph

57) $\{t \mid t \geq 1\}$

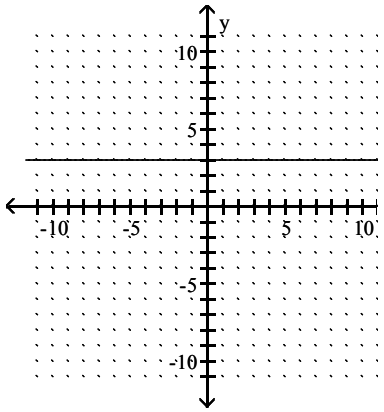


Objective: (10.7) c: Solve Inequality Using Addition Principle

58) A
Objective:

59) A
Objective:

60)



Objective: (11.3) a: Graph Line and Find Slope Given Two Points

61) A
Objective:

62) 384 mi^2
Objective: (6.3) b: Find Area of Trapezoid

63) 575 cm^2
Objective: (6.3) b: Find Area of Triangle

64) 18.84 cm
Objective: (6.4) d: Find Perimeter of Composite Figure Including Circle

65) Trinomial, degree 4
Objective: (12.3) i: Classify Polynomial

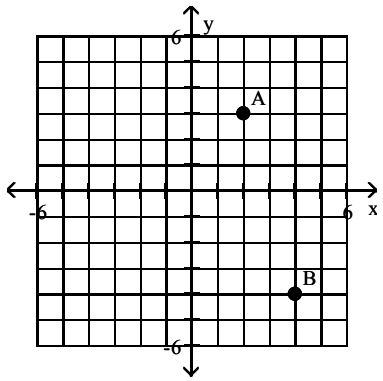
66) $\{y \mid y \leq -1\}$
Objective: (2.7) e: Solve Inequality Using Both Principles

67) $\{x \mid x \geq -9\}$
Objective: (2.7) e: Solve Inequality Using Both Principles

68) $\frac{1}{x^4}$
Objective: (4.1) d, f: Use Product Rule to Multiply with Exponents

69) 5^7
Objective: (4.1) d, f: Use Product Rule to Multiply with Exponents

70)



Objective: (3.1) a: Plot Points Associated with Ordered Pairs

71) {e, f, g, h, i, j, k, l}
Objective: (16.5) c: Find Union of Sets

72) –16
Objective: (12.3) a: Evaluate Polynomial

73) 94 m
Objective: (6.2) a: Find the Perimeter of a Polygon

74) (2m + 7n)(9 – m)
Objective: (5.1) c: Factor Out a Binomial Factor

75) 75
Objective: (10.3) b: Clear Fractions or Decimals and Solve

76) 379 yd^2
Objective: (6.3) c: Find Area of Shaded Region

77) 10
Objective: (12.7) b: Identify Degree of Polynomial

78) $3x + 4 + \frac{3}{x}$
Objective: (5.5) Divide Polynomial by Monomial

79) $\frac{k}{k + 4}$
Objective: (6.1) d: Multiply Rational Expressions

80) {8}
Objective: (16.5) c: Find Intersection of Sets