

REVIEW FOR MATH A FINAL

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*5 points will be taken off your Final Exam for
writing in this booklet*

Return to the ILP Lab or Your Instructor
Before Taking the Final Exam!

BOOK # _____

FORMULA SHEET: MATH A

Equations of Lines

$$y = mx + b$$

$$y - y_1 = m(x - x_1)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Quadratic Formula

$$y = ax^2 + bx + c$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Geometric Formulas

Pythagorean Theorem: $a^2 + b^2 = c^2$

Perimeter Formulas

Square: $P = 4S$

Rectangle: $P = 2L + 2W$

Triangle: $P = a + b + c$

Circle: $C = 2\pi r$

Area Formulas

Square: $A = S^2$

Rectangle: $A = L \cdot W$

Triangle: $A = \frac{1}{2}b \cdot h = \frac{b \cdot h}{2}$

Circle: $A = \pi r^2$

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Review for Math A Final Exam

Part 1

This review covers material which will be on the first half of the final exam.
This is only the first half of the Review! Please see Part 2 for other topics covered.

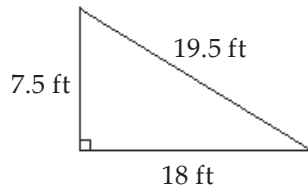
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Show all work for each problem on separate paper.

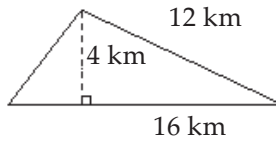
Solve the problem.

- 1) $17 - (2y - 2) = 2(y - 1) + 3y$
- 2) $4x + 4 + 7(x + 1) = 7x + 6$
- 3) $\frac{x}{10} = \frac{x}{3} + \frac{1}{10}$
- 4) $\frac{2x}{3} + 3 = \frac{1}{2}$
- 5) 21 is 2% of what number?
- 6) 18% of what number is 3.6?
- 7) A certain car has a weight limit for all passengers and cargo of 1179 pounds. The four passengers in the car weigh an average of 160 pounds each. Use an inequality to find the maximum weight of the cargo that the car can handle.
- 8) Claire received scores of 85, 88, 87, and 75 on her algebra tests. What score must she receive on the fifth test to have an overall test score average of at least 83?
- 9) Sue can sew a precut dress in 3 hours. Helen can sew the same dress in 2 hours. If they work together, how long will it take them to complete sewing that dress? Give your answer rounded to one decimal place, if necessary.
- 10) A painter can finish painting a house in 4 hours. Her assistant takes 6 hours to finish the same job. How long would it take for them to complete the job if they were working together?

- 11) Find the area of the triangle.



- 12) Find the area of the triangle.



Solve the inequality. State the interval. Graph the solution set on a number line.

- 13) $-5 \leq x < -1$
- 14) $5 - 3(1 - x) \leq -16$
- 15) $4x + 9 \geq 2x + 3$
- 16) $\frac{2}{3}(2x - 1) < 10$

Solve the system of equations. If there is no solution or an infinite number of solutions, so state.

- 17)
$$\begin{cases} 8x + 6y = -40 \\ -2x - 4y = 10 \end{cases}$$
- 18)
$$\begin{cases} -4x - 16y = 1 \\ 6x + 24y = 0 \end{cases}$$
- 19)
$$\begin{cases} x - 6y = 18 \\ -7x - 7y = 70 \end{cases}$$
- 20)
$$\begin{cases} -5x = -35 \\ x - 2y = -1 \end{cases}$$

Solve the problem.

- 21) Jamil always throws loose change into a pencil holder on his desk and takes it out every two weeks. This time it is all nickels and dimes. There are 8 times as many dimes as nickels, and the total value of the coins is \$4.25. How many nickels and dimes does Jamil have?
- 22) One number is four more than a second number. Two times the first number is 2 more than four times the second number. What are the numbers?
- 23) If the sides of a square are increased by 2 meters, the area becomes 25 square meters. Find the length of a side of the original square.
- 24) The width of a rectangular picture frame is 6 feet less than twice its height. If its area is 108 square feet, find the dimensions of the rectangle.

Solve the equation. If possible, simplify radicals or rationalize denominators.

25) $x^2 = -6x - 9$

26) $2x^2 - 14x + 24 = 0$

27) $\frac{23}{x} = 8 - \frac{1}{x}$

28) $6 - \frac{5}{x} = \frac{6x}{x+5}$

29) $\sqrt{x-1} + 3 = 5$

30) $2\sqrt{x+1} = 7$

31) $(x+2)^2 = 24$

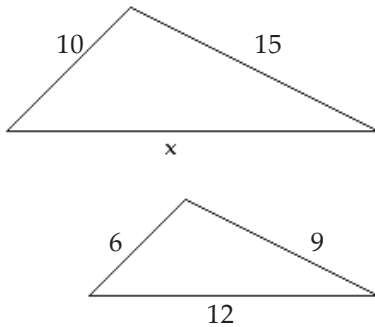
32) $(x-2)^2 = 9$

Solve the problem. Express the answer in radical form and simplify, if possible.

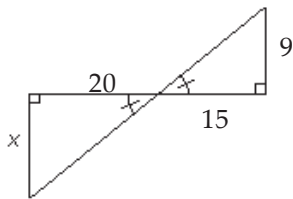
- 33) A square sheet of paper measures 48 centimeters on each side. What is the length of the diagonal of this paper?
- 34) A 45 foot ladder is leaning against a wall. The base of the ladder is 27 feet from the base of the wall. How far up the wall does the ladder reach?

Find the missing length in the similar triangles.

35)



36)



Solve the equation. Simplify irrational solutions, if possible.

37) $9x^2 - 32 = 12x$

38) $4x^2 - 28x + 49 = 0$

39) $2x^2 = -10x - 2$

40) $y^2 - 9y - 1 = 0$

Review for Math A Final Exam Answer Key for Part 1

1) $y = 3$

2) $x = -\frac{5}{4}$

3) $x = -\frac{3}{7}$

4) $x = -\frac{15}{4}$

5) 1050

6) 20

7) at most 539 lb

8) at least 80

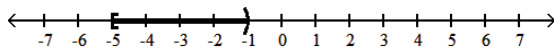
9) 1.2 hr

10) $2\frac{2}{5}$ hr

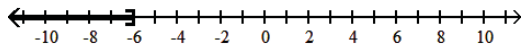
11) 67.5 ft^2

12) 32 km^2

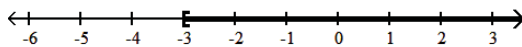
13) $[-5, -1)$



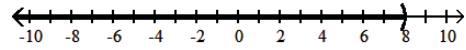
14) $(-\infty, -6]$



15) $[-3, \infty)$



16) $(-\infty, 8)$



17) $(-5, 0)$

18) no solution

19) $(-6, -4)$

20) $(7, 4)$

21) 5 nickels and 40 dimes

22) 7 and 3

23) 3 m

24) width = 12 ft; height = 9 ft

25) $x = -3$

26) $x = 3, x = 4$

27) $x = 3$

28) $x = 1$

29) $x = 5$

30) $x = 9$

31) $x = -2 \pm 2\sqrt{6}$

32) $x = -1, x = 5$

33) $48\sqrt{2}$ cm

34) 36 ft.

35) $x = 20$

36) $x = 12$

Review for Math A Final Exam Answer Key for Part 1

$$37) x = \frac{8}{3}, x = -\frac{4}{3}$$

$$38) x = \frac{7}{2}$$

$$39) x = \frac{-5 \pm \sqrt{21}}{2}$$

$$40) y = \frac{9 \pm \sqrt{85}}{2}$$

Review for Math A Final Exam Part 2

This review covers material which will be on the second half of the final exam.
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Show all work for each problem on separate paper.

Use the order of operations to simplify the expression.

1) $8[7^2 + 4(5 + 6)]$

2) $(7 - 9)^2(3 - 5)^3$

Simplify the algebraic expression.

3) $5(9y + 8) - (5y - 6)$

4) $1 - 4[2 - (6x + 4)]$

Find the x-intercept and the y-intercept of the line with the given equation.

5) $15x - 5y = -10$

6) $4x - 12y = 12$

Find the slope of the line passing through the pair of points or state that the slope is undefined.

7) $(-5, -6)$ and $(-5, -9)$

8) $(-1, 15)$ and $(-9, 6)$

Graph the linear equation.

9) $7x + 5y = 35$

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

Use the given conditions to write an equation in slope-intercept form.

11) Slope = -4 , passing through $(3, 5)$

12) Slope = $\frac{5}{4}$, passing through $(-8, -1)$

Graph the inequality.

13) $3x + 4y \geq -12$

14) $y > -3x - 9$

Add or subtract the polynomials as indicated.

15) $(2x^3 + 6x^5 - 1 + 6x^4) - (5 - 3x^4 + 3x^5 + 7x^3)$

16) $(8y^6 - 2y^3 - 3y) + (6y^6 + 7y^3 + 5y)$

Find the product.

17) $(y - 2)(y^2 + 2y + 7)$

18) $(x + 11)(x^3 + 6x - 3)$

19) $(9 - 7x)^2$

20) $(3x + 11)^2$

Evaluate the polynomial for the given values of x and y.

21) $x^3 + 3x^2y + 3xy^2 + y^3$; $x = -3$ and $y = -1$

22) $2x^2y + 3xy - 7y$; $x = -3$ and $y = -1$.

Simplify the expression.

23) $\frac{32x^{10}y^{12}z^5}{8x^4y^5z^4}$

24) $\frac{18x^8 - 30x^5 + 6x^2}{6x}$

25) $\frac{(x^3)^3}{x^{15}}$

26) $(6x^2)^3 x^{-15}$

Divide as indicated.

27) $\frac{-8x^3 - 10x^2 + 19x + 4}{4x - 1}$

28) $\frac{p^2 + 2p - 61}{p + 9}$

Write the expression with positive exponents only. Simplify, if possible.

29) $\frac{x^{-2}}{y^{-3}}$

30) $\frac{1}{3x^{-4}}$

Simplify, if possible.

31) $(2x^{-3})^{-2}$

32) $(x^{-3}y^3)^{-1}$

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

33) $\frac{8 \times 10^{-6}}{2 \times 10^{-8}}$

34) $(7.6 \times 10^6)(2 \times 10^{-10})$

Factor completely or indicate that the polynomial is prime.

35) $15x^2 + 20xy - 9xy - 12y^2$

36) $x^2 + 2x + 5x + 10$

37) $x^2 - x - 45$

38) $3x^4 + 24x^3 - 27x^2$

39) $8z^2 + 6z - 9$

40) $6x^2 + 17x + 12$

41) $25k^2 - 64m^2$

42) $36x^2 + y^2$

Simplify, if possible.

43)
$$\frac{3x + 2}{15x^2 + 19x + 6}$$

44)
$$\frac{2x - 6}{x^2 - 8x + 15}$$

Perform the indicated operation. Simplify if possible.

45)
$$\frac{5p - 5}{p} \cdot \frac{4p^2}{7p - 7}$$

46)
$$\frac{2y - 2}{y} \div \frac{9y - 9}{4y^2}$$

47)
$$\frac{6}{x + 6} - \frac{5}{8x + 48}$$

48)
$$\frac{8}{3x - 12} + \frac{x}{x^2 - 16}$$

Simplify, if possible.

49)
$$\sqrt{150x^2y}$$

50)
$$\sqrt{16x^{13}}$$

51)
$$\sqrt[3]{\frac{22}{125}}$$

52)
$$\sqrt[5]{243}$$

Perform the indicated operation. Simplify if possible.

53) $\sqrt{98} \cdot \sqrt{18}$

54) $\sqrt{7} \cdot \sqrt{4}$

55) $-6\sqrt{5} - 9\sqrt{20}$

56) $6\sqrt{8} + 9\sqrt{200} - 9\sqrt{72}$

57) $(5\sqrt{2} + 2)(8\sqrt{2} + 7)$

58) $(6 + \sqrt{7})(10 - 6\sqrt{7})$

59) $\frac{14}{\sqrt{63}}$

60) $\frac{5}{\sqrt{10} + 3}$

Review for Math A Final Exam Answer Key for Part 2

1) 744

2) -32

3) $40y + 46$

4) $24x + 9$

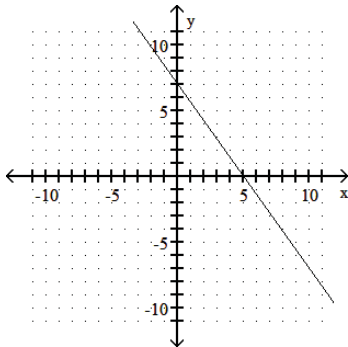
5) x-intercept at $\left(-\frac{2}{3}, 0\right)$; y-intercept at $(0, 2)$

6) x-intercept at $(3, 0)$; y-intercept at $(0, -1)$

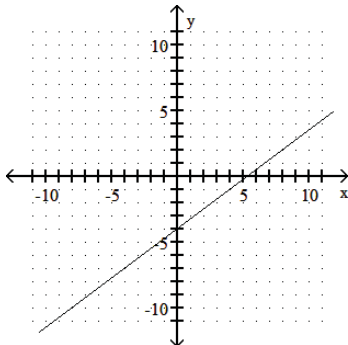
7) undefined

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

9)



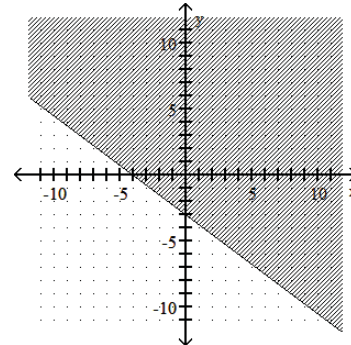
10)



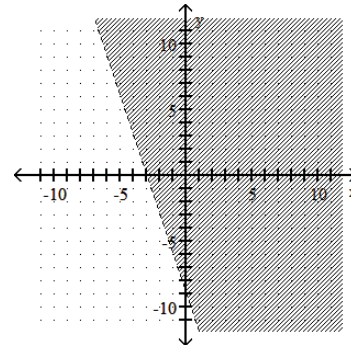
11) $y = -4x + 17$

12) $y = \frac{5}{4}x + 9$

13)



14)



15) $3x^5 + 9x^4 - 5x^3 - 6$

16) $14y^6 + 5y^3 + 2y$

17) $y^3 + 3y - 14$

18) $x^4 + 11x^3 + 6x^2 + 63x - 33$

19) $49x^2 - 126x + 81$

20) $9x^2 + 66x + 121$

21) -64

Review for Math A Final Exam Answer Key for Part 2

22) -2

23) $4x^6y^7z$

24) $3x^7 - 5x^4 + x$

25) $\frac{1}{x^6}$

26) $\frac{216}{x^9}$

27) $-2x^2 - 3x + 4 + \frac{8}{4x - 1}$

28) $p - 7 + \frac{2}{p + 9}$

29) $\frac{y^3}{x^2}$

30) $\frac{x^4}{3}$

31) $\frac{x^6}{4}$

32) $\frac{x^3}{y^3}$

33) 4×10^2

34) 1.52×10^{-3}

35) $(5x - 3y)(3x + 4y)$

36) $(x + 2)(x + 5)$

37) prime

38) $3x^2(x + 9)(x - 1)$

39) $(4z - 3)(2z + 3)$

40) $(2x + 3)(3x + 4)$

41) $(5k + 8m)(5k - 8m)$

42) prime

43) $\frac{1}{5x + 3}$

44) $\frac{2}{x - 5}$

45) $\frac{20p}{7}$

46) $\frac{8y}{9}$

47) $\frac{43}{8(x + 6)}$

48) $\frac{11x + 32}{3(x + 4)(x - 4)}$

49) $5x\sqrt{6y}$

50) $4x^6\sqrt{x}$

51) $\frac{\sqrt[3]{22}}{5}$

52) 3

53) 42

54) $2\sqrt{7}$

55) $-24\sqrt{5}$

56) $48\sqrt{2}$

57) $94 + 51\sqrt{2}$

58) $18 - 26\sqrt{7}$

59) $\frac{2\sqrt{7}}{3}$

60) $5\sqrt{10} - 15$

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