

## Math 0200 Final Exam Review Questions

1. Simplify:  $24 \div 8 \cdot 3 + 28 \div (-7)$

2. Simplify:  $\frac{11 - (-9) + 6(10 - 4)}{2 + 3 \cdot 4}$

3. Simplify  $-(-5x + 7) - 3(2 - x) - 8x - 6$

4. Simplify:  $(4x^3)^{-2} \cdot x^9$

5. Simplify:  $\left(\frac{x^4}{x^7}\right)^{-3}$

6. Evaluate  $x^3 - 4x^2y + 2y - 5$  when  $x = -2$  and  $y = -3$

Write each of the values below in decimal or standard notation.

7.  $3.113 \times 10^{-5}$

8.  $1.201 \times 10^9$

Write each of the values below in scientific notation.

9. 87,000,000

10. 0.000017

Solve for  $x$ .

11.  $2(x - 3) + 5x = 8(x - 1)$

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

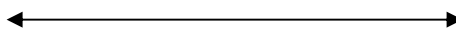
13.  $\frac{x+2}{3} = \frac{x}{6}$



### Math 0200 Final Exam Review Questions

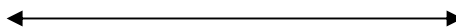
20. Solve the inequality, show the solution in set notation, interval notation and graphed on the number line.

$$-30 < \frac{x}{5}$$

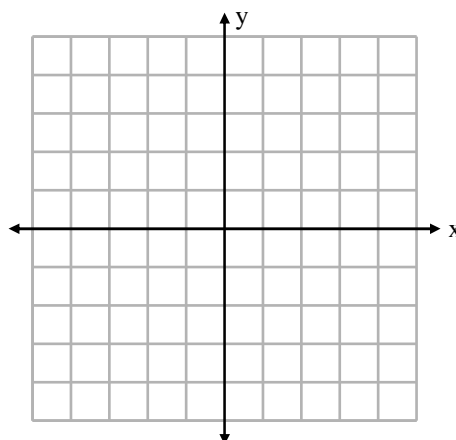


21. Solve the inequality, show your solution in set notation, interval notation and graphed on the number line.

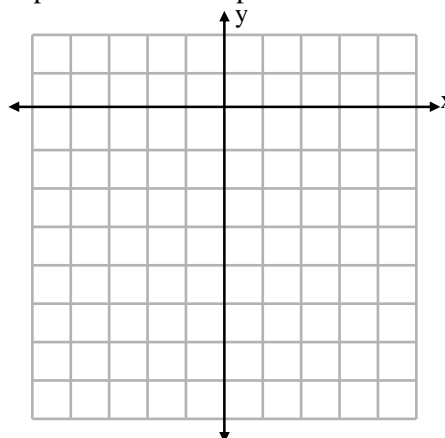
$$33x + 33 \geq 3(4x + 3)$$



22. Sketch the line  $5x + 4y = 20$  using  $x$ - and  $y$ -intercepts and a checkpoint on the axis provided. Label the  $x$  and  $y$  intercepts.



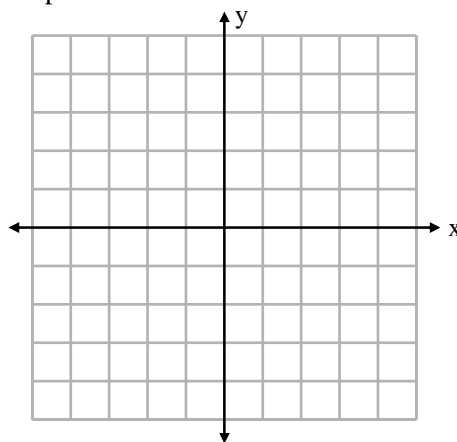
23. Sketch the line  $y = 3x - 6$  using  $x$ - and  $y$ -intercepts and a checkpoint on the axis provided and label the  $x$  and  $y$  intercepts.



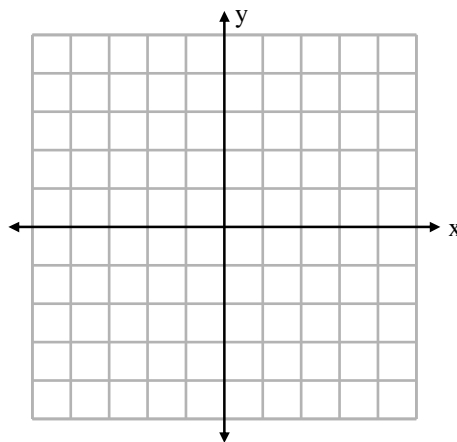
### Math 0200 Final Exam Review Questions

24. Use the slope and y-intercept to sketch  $y = -\frac{1}{2}x + 3$  on the axes provided.

State the slope and the y-intercept.



25. Sketch the line with slope  $m = \frac{2}{3}$  that contains the point  $(-1, -3)$ . Label the given point and at least 2 other points on the graph.



26. Find an equation for the line with y-intercept of 4 and parallel to the line  $y = 3x - 2$ . Leave the final answer in slope-intercept form.

27. Find the slope of the line that passes through the points  $(3, -4)$  and  $(5, 0)$ .

28. Find an equation for the line with undefined slope which passes through the point  $(-7, 2)$ .

29. Find an equation for the line parallel to the line  $y = -2$  which passes through the point  $(3, -1)$

### Math 0200 Final Exam Review Questions

Perform the indicated operations. Leave your answer in simplified form.

30.  $(-2x^2y + 9xy + xy^2 + 21) + (-4xy + 3xy^2 - 11)$       31.  $(7x^2y - 8xy + 11) - (7x^2y + 9xy + x - 21)$

32.  $3a^3b(7a^3b^2 + ab^2 - 4a)$

33.  $(2y + 4)(-3y + 1)$

34.  $3y^3(2y^2 - 3y + 11)$

35.  $(x - 9)(x + 9)$

Completely factor each of the following expressions. If the expression cannot be factored write "PRIME".

36.  $m^2 + 12m + 36$

37.  $p^2 - 100$

38.  $r^2 + r + 2$

39.  $t^2 + 2t - 15$

40.  $2v^2 - v - 3$

41.  $2x^3 + 8x^2 + 6x$

42. Simplify each expression. Leave your answer in the form of a simplified radical, if necessary.

a.  $\frac{\sqrt{49} \cdot \sqrt{54}}{\sqrt{6}}$

b.  $\sqrt{25 - 16}$

c.  $\sqrt{25} - \sqrt{16}$

d.  $\frac{\sqrt{16x}}{\sqrt{2x}}$

43. Use the product rule for square roots to simplify. DO NOT use a calculator to approximate an answer.

a.  $\sqrt{72}$

b.  $\sqrt{40}$

c.  $\sqrt{34}$

d.  $\sqrt{700}$

### Math 0200 Final Exam Review Questions

44. The length of a rectangular garden is 4 feet longer than the width. If the area of the garden is 140 sq. feet, find the dimensions of the garden.

Solve the quadratics using the method of your choice.

45.  $16t^2 - 4 = 0$

46.  $3x^2 + x = 10$

47.  $8x^2 + 2x = 1$

Perform the indicated operations and simplify the answer.

48.  $\frac{x^2 - y^2}{3x - 3y} \cdot \frac{6}{2x + 3y}$

49.  $\frac{m^2 - m}{m^2 - 1} \div \frac{m + 2}{m^2 + 3m + 2}$

50.  $\frac{p - 7}{p - 2} + \frac{2p + 1}{p - 2}$

51.  $\frac{2n^2 - 5n}{3n} - \frac{n^2 - 13n}{3n}$

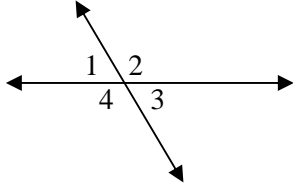
52.  $\frac{k}{k + 3} = \frac{6}{15}$

53. Solve  $P = 2l + 2w$  for  $w$

54. Solve  $S = P + Prt$  for  $t$

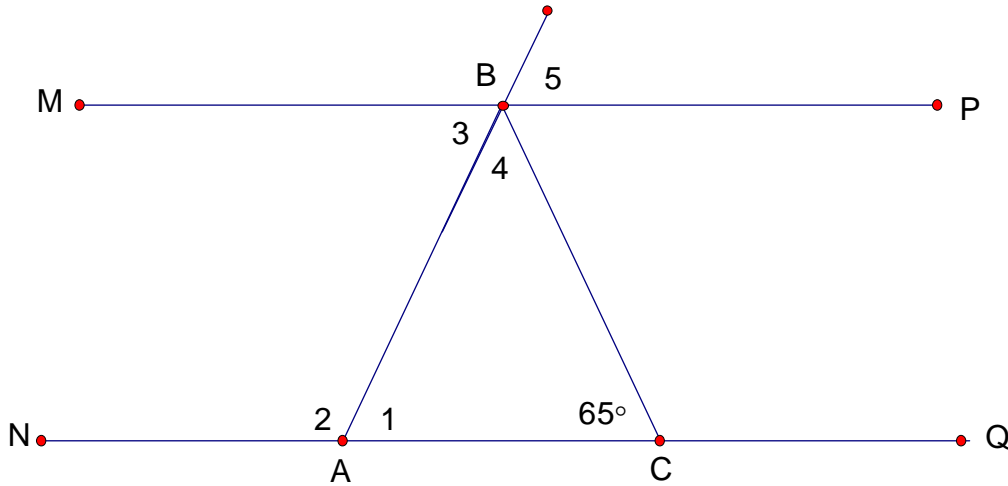
### Math 0200 Final Exam Review Questions

55. If  $m\angle 2 = 135^\circ$ , find the measure of the remaining angles.



56. If  $m\angle A = 6x$  and  $m\angle B = x + 5$  and the angles are supplementary, find the measure of the angles.

57. In the given figure  $\overline{MP} \parallel \overline{NQ}$  and  $\overline{AB} \cong \overline{BC}$



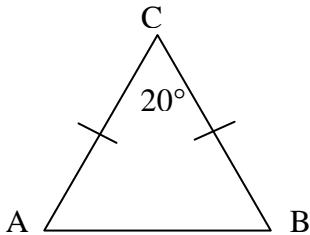
a) Classify triangle  $ABC$  in the figure above. a. \_\_\_\_\_

b) Find the measures of angles 1-5 in the figure above.

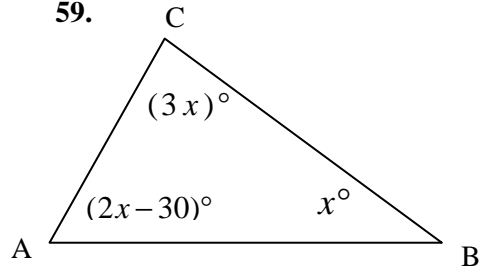
$m\angle 1 =$  \_\_\_\_\_  $m\angle 2 =$  \_\_\_\_\_  $m\angle 3 =$  \_\_\_\_\_  $m\angle 4 =$  \_\_\_\_\_  $m\angle 5 =$  \_\_\_\_\_

In the given figures, find the measures of the remaining angles.

58.



59.

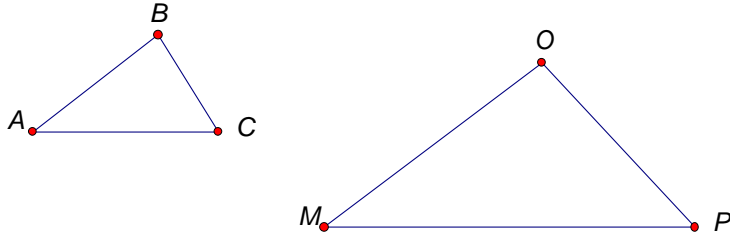


## Math 0200 Final Exam Review Questions

60. Answer the following true or false:

- An obtuse triangle can have 3 obtuse angles.
- All isosceles triangles have 2 congruent sides and two congruent angles.
- An equilateral triangle is also equiangular.

In exercises 61-62 use the figure below where  $\triangle ABC \sim \triangle MOP$ .

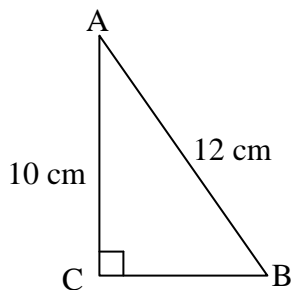


61. Name the congruent angles and the congruent sides.

62. Find  $BC$  if  $AB = 8$ ,  $MO = 104$  and  $OP = 78$ .

63. Find the height of a tree that casts an 80 foot shadow at the same time that a telephone pole 18 feet tall casts a 12 foot shadow.

64. Use the Pythagorean Theorem to find the length of  $BC$  the right triangle below. Leave your answers in simplified radical form. Assume all units are in centimeters.

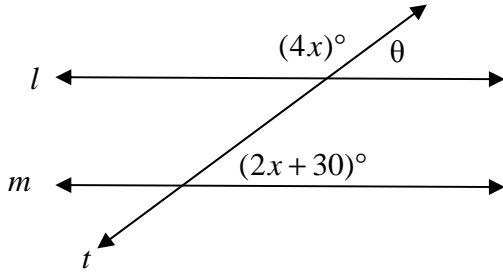


65. Solve the following problem by A) defining a variable, B) writing an equation, C) solving the equation and D) answering the question in a complete sentence.

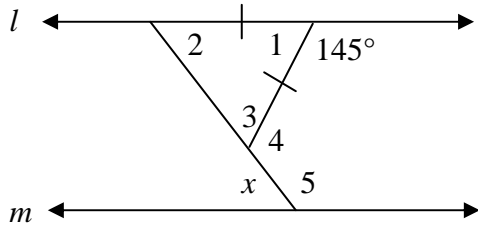
A 13 foot ladder is set 5 feet from the base of the wall. How far up the wall will the ladder reach?

### Math 0200 Final Exam Review Questions

66. If  $l \parallel m$  and  $t$  is a transversal, find  $x$  and  $m\angle\theta$  justify the answer.



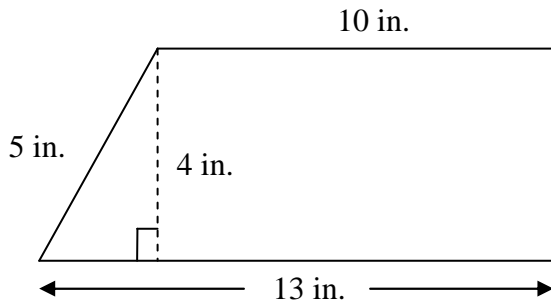
67. If  $l \parallel m$ , find  $x$  and justify the answer.



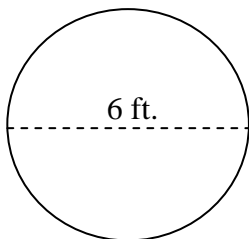
68. Complete the following table:

Polygon	Number of sides of polygon
hexagon	
triangle	
octagon	
quadrilateral	
pentagon	

69. Find the area and perimeter of the figure.

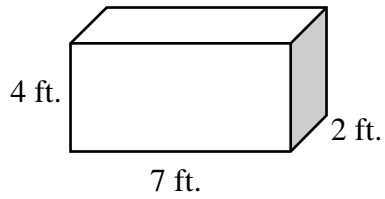


70. Find the circumference and area of the following circle. Leave your answer in terms of  $\pi$ .



## Math 0200 Final Exam Review Questions

71. Find the volume  $V$  and surface area  $S$  of the right prism.

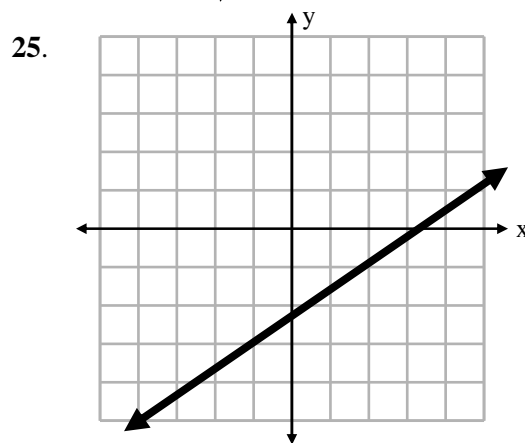
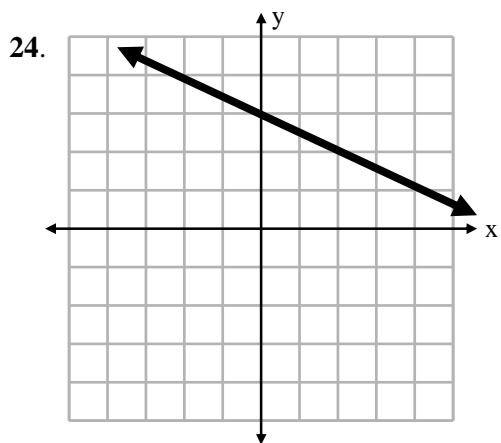
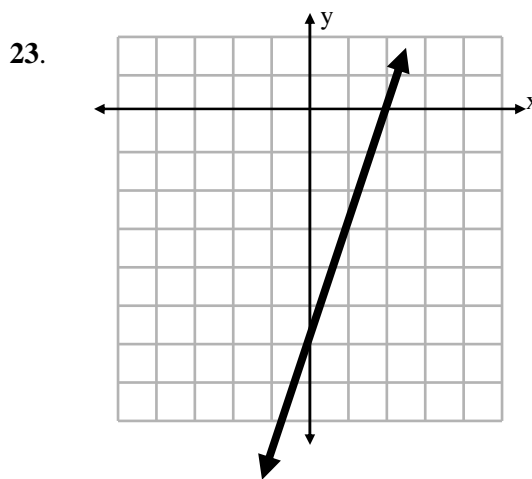
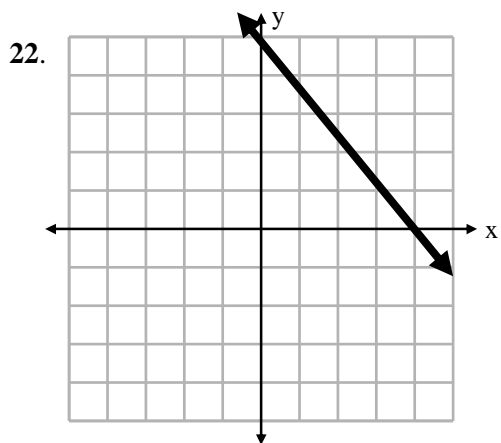


72. Find the volume  $V$  and surface area  $S$  of a square pyramid with height 10 feet, slant height 12 feet and base 8 feet. Leave answers in fractional form with the correct units attached.

73. Find the volume  $V$  and surface area  $S$  of a sphere with radius 2 cm. Leave answers in terms of  $\pi$ .

## Math 0200 Final Exam Review Questions

1. 5
2. 4
3. -19
4.  $\frac{x^3}{16}$
5.  $x^9$
6. 29
7. 0.00003113
8. 1,201,000,000
9.  $8.7 \times 10^7$
10.  $1.7 \times 10^{-5}$
11.  $x = 2$
12.  $x = 7$
13.  $x = -4$
14. The number is 43.
15. The lengths of the pieces are 15 inches, 32 inches, and 40 inches.
16. The architect worked 27 hours.
17. They should enroll 2024 students.
18. The student needs 92% or better on test 4 to earn a B in the course.
19. It is 225 miles from the starting point.
20.  $\{x \mid x > -150\}$ ,  $(-150, \infty)$
21.  $\left\{x \mid x \geq -\frac{8}{7}\right\}$ ,  $\left[-\frac{8}{7}, \infty\right)$



### Math 0200 Final Exam Review Questions

26.  $y = 3x + 4$   
 27.  $m = 2$   
 28.  $x = 7$   
 29.  $y = -1$   
 30.  $-2x^2y + 5xy + 4xy^2 + 10$   
 31.  $-x - 17xy + 32$   
 32.  $21a^6b^3 + 3a^4b^3 - 12a^4b$   
 33.  $-6y^2 - 10y + 4$   
 34.  $6y^5 - 9y^4 + 33y^3$   
 35.  $x^2 - 81$   
 36.  $(x + 6)^2$   
 37.  $(p - 10)(p + 10)$   
 38. PRIME  
 39.  $(t + 5)(t - 3)$   
 40.  $(2v - 3)(v + 1)$   
 41.  $2x(x + 3)(x + 1)$   
 42. a. 21; b. 3; c. 1; d.  $2\sqrt{2}$   
 43. a.  $6\sqrt{2}$ ; b.  $2\sqrt{10}$ ; c.  $\sqrt{34}$ ; d.  $10\sqrt{7}$   
 44. The dimensions of the garden are 10 ft x 14 ft  
 45.  $t = \pm \frac{1}{2}$   
 46.  $x = \frac{5}{3}, x = -2$   
 47.  $x = \frac{1}{4}, x = -\frac{1}{2}$   
 48. 1  
 49.  $m$   
 50. 3  
 51.  $\frac{n + 8}{3}$   
 52.  $k = 2$   
 53.  $w = \frac{P - 2l}{2}$   
 54.  $t = \frac{S - P}{Pr}$   
 55.  $m\angle 2 = 135^\circ, m\angle 4 = 135^\circ, m\angle 1 = 45^\circ$   
 $m\angle 3 = 45^\circ$   
 56.  $m\angle A = 150^\circ$  and  $m\angle B = 30^\circ$   
 57. isosceles triangle,  
 $m\angle 1 = 65^\circ, m\angle 2 = 115^\circ, m\angle 3 = 65^\circ, m\angle 4 = 50^\circ, m\angle 5 = 65^\circ$   
 58.  $m\angle A = 80^\circ, m\angle B = 80^\circ$   
 59.  $m\angle A = 40^\circ, m\angle B = 35^\circ, m\angle C = 105^\circ$   
 60. a. false, b. true, c. true  
 61.  $\angle A \cong \angle M, \angle B \cong \angle O, \angle C \cong \angle P$  and  
 $\overline{AB} \cong \overline{MO}, \overline{BC} \cong \overline{OP}, \overline{AC} \cong \overline{MP}$   
 62.  $BC = 6$   
 63. The tree is 120 feet tall.  
 64.  $BC = 2\sqrt{11}$  cm  
 65. The ladder will reach 12 feet up the wall.  
 66.  $x = 25, \theta = 80^\circ$   
 67.  $x = 72.5^\circ$   
 68. 6, 3, 8, 4, 5  
 69.  $A = 46$  sq in  $P = 32$  in  
 70.  $A = 9\pi$  sq ft  $C = 6\pi$  ft  
 71.  $V = (4)(7)(2) = 56$  cubic ft  $S = 2(28) + 2(14) + 2(8) = 100$  sq ft  
 72.  $V = \frac{640}{3}$  cubic ft,  $S = 256$  sq ft  
 73.  $V = \frac{32}{3}\pi$  cubic cm,  $S = 16\pi$  square cm