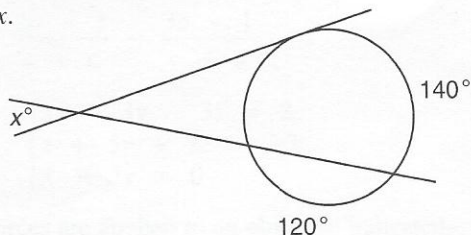


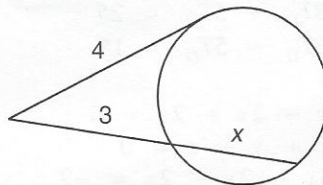
- The volume of a quantity of an ideal gas was held constant. The initial pressure and temperature were 400 torr and 80 K. What would be the final temperature if the final pressure was 300 torr?
- The measure of feet varied directly with the time in seconds. If it took 96 feet for 4 seconds, how many feet will it take for 12 seconds?
- A paddleboat can travel 60 miles upstream in the same time it takes to travel 140 miles downstream. If the current of the river is 10 miles per hour, what is the speed of the paddleboat in still water?
- If  $f(x) = 2x + 5$  and  $g(x) = x^2 - 3x$ , find  $g(-3)$ .
- Use the discriminant to determine the kinds of numbers that will satisfy the equation  $5x = x^2 - 3$ . Do not solve.

6. Find  $x$ .

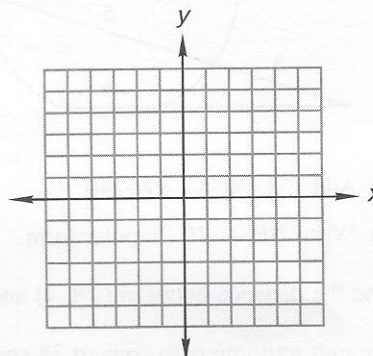
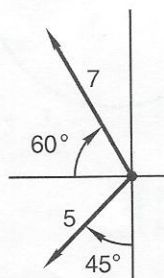
(a)



(b)



- (a) Begin with  $ax^2 + bx + c = 0$  and derive the quadratic formula by completing the square.  
(b) Solve  $x = -2 - 3x^2$  by using the quadratic formula.
- Solve:  $\sqrt{x - 15} + 1 = \sqrt{x}$
- The two forces are applied to the point as indicated. Find the resultant force.
- Graph:  $\begin{cases} 3x - 4y \geq 12 \\ 2x + y < 1 \end{cases}$

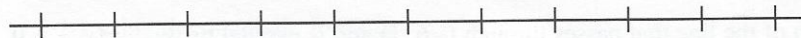


11. Find  $x$ :  $\frac{x + z}{a} = a\left(\frac{b}{m} + \frac{1}{c}\right)$

12. Solve:  $\begin{cases} x + y + z = 5 \\ x - 2y + z = 8 \\ 3x - y - z = 3 \end{cases}$

13. Solve:  $\begin{cases} x^2 + y^2 = 5 \\ x - 3y = 5 \end{cases}$

14. Graph on a number line:  $-x - 3 \leq 1$  or  $x + 2 > 3$ ;  $D = \{\text{Integers}\}$



Simplify:

15.  $\frac{m^{x/4}n^3}{m^{2x/3}(n^a)^3}$

16.  $\frac{7 - 5i}{5 + i}$

17.  $5\sqrt{\frac{7}{20}} - 2\sqrt{\frac{20}{7}} - 3\sqrt{560}$

18.  $\frac{6 - 7\sqrt{3}}{2\sqrt{3} + 4}$

19.  $\frac{a}{b + \frac{1}{1 + \frac{c}{x}}}$

20. Use unit multipliers to convert 27 cubic feet per minute to liters per hour.