

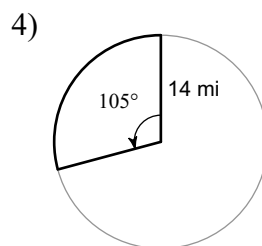
Perform the indicated operation.

1) $g(x) = x^2 - 3x$
 $f(x) = 3x - 4$
 Find $(-3g + 4f)(-4)$

2) $g(n) = 2n - 2$
 $h(n) = n^2 + 3n$
 Find $(g \circ h)(n)$

3) $g(t) = -t - 4$
 $f(t) = t^2 + 2$
 Find $(g \circ f)(-9)$

Find the area of each sector.



Factor each completely.

5) $a^2 - 10a$

6) $n^2 - 16$

7) $4x^2 + 36x + 56$

8) $3k^2 - 24k + 21$

- Convert the equation to intercept form by factoring.
- What are the x-intercepts?
- Find the vertex using the method I taught in the notes.
- Write the vertex form equation.

9) $y = x^2 - 6x + 8$

10) $y = x^2 - 14x + 40$

Find each product.

11) $(4n + 5)^2$

12) $(8r + 2)^2$

Find the "zeroes" of the equations.

13) $y = x^2 - 24$

14) $v^2 = -17$

15) Find the zeroes.

$$y = -3(x - 4)^2 + 6$$

16) Find the zeroes.

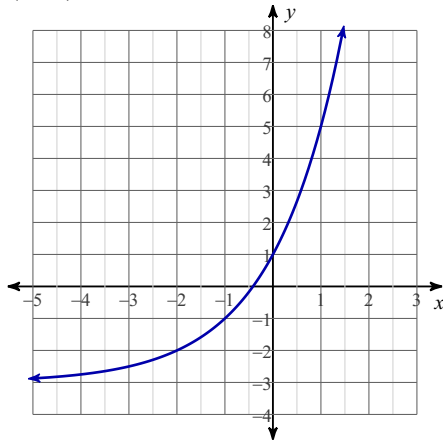
$$y = -7(x - 6)^2 - 21$$

- 17) A company's profit can be modeled by the equation $p(u) = -u^2 + 180u + 1000$ where 'u' is the number of units sold. Find the maximum profit of the company. How many units should the company sell to maximize profit? (hint: set your window to $x_{\min}=-20$, $x_{\max}=200$ to see the sides of the parabola then adjust your y_{\max} to see the vertex of the parabola.
- 18) The length of a rectangle is 5 less than twice a number. The width of the rectangle is 5 more than the same number. If the area of the rectangle is 200 square feet,
- What is the number?
 - what is the length of the rectangle
 - What is the width of the rectangle?
- 19) You have 250 feet of fence to build a rectangular corral adjacent to a lake. The side next to the lake is not fenced.
- Write the equation used to calculate the area.
 - What is the maximum area enclosed by the fence?
 - What are the side lengths of the corral?

20) A rock is dropped from a 100 foot tower. The height of the rock as a function of time can be modeled by the equation: $h(t) = -16t^2 + 100$. How long does it take for the rock to reach the ground?

21) A ball is thrown from ground level upward at an initial velocity of 60 ft/ sec. What is the ball's maximum altitude? The equation for "projectile motion" is $h(t) = -16t^2 + 60t$

22) Write the equation for the graph. The graph passes through the ordered pairs (0, 1) and (1, 5)



23) What values can the base of an exponential function be? Write your answer in interval notation.

24) How many different 1st, 2nd, and 3rd place finishers are possible for a race with 20 people in it?

25) How many different license plates are possible if the license plates have 4 digits followed by 3 letters? (you may NOT use replacement).

a) State if each scenario involves a permutation or a combination
b) Find the number of possibilities.

26) A group of 45 people are going to run a race. The top three runners earn gold, silver, and bronze medals.

27) There are 30 applicants for two Manager positions.

Find the probability of each event.

28) Julio is carrying ten pages of math homework and three pages of English homework. A gust of wind blows the pages out of his hands and he is only able to recover ten random pages. What is the probability that he recovers all of his math homework?

$$29) P(A) = \frac{9}{20} \quad P(A \text{ and } B) = \frac{9}{80} \quad P(B) = ?$$

$$30) P(B) = \frac{7}{20} \quad P(A|B) = \frac{9}{20} \quad P(A \text{ and } B) = ?$$

Simplify.

$$31) \frac{-9 - 10i}{-5 - 7i}$$

Convert each degree measure into radians.

32) 280°

33) A car dealership sells Ford and Honda automobile. There are 6 black Fords and 5 silver Fords on the car lot. There are 4 black Hondas and 3 silver Hondas.

- a)
- b) $P(B \text{ and } H) = ?$
- c) $P(H / B) = ?$
- d) $P(H \text{ or } S) = ?$
- e) $P(F) = ?$