

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Specify the center and radius of the circle.

1) $x^2 - 14x + y^2 - 6y + 22 = 0$

Find the zeros of the polynomial function and state the multiplicity of each.

2) $f(x) = (x^2 - 4)^2$

Write an equation for a function whose graph fits the given description.

3) The graph of $f(x) = \sqrt{x}$ is shifted 3 units to the left and then shifted 2 units upward.

Write the quotient in the standard form $a + bi$.

4) $\frac{6 - 2i}{2 + 3i}$

Find all the zeros of the polynomial function.

5) $P(x) = 16x^3 - 40x^2 + 18x - 4$

Find the standard form of the equation for the ellipse satisfying the given conditions.

6) Center $(0, 0)$, vertical major axis of length 16 and minor axis of length 12

Solve the system by the elimination method.

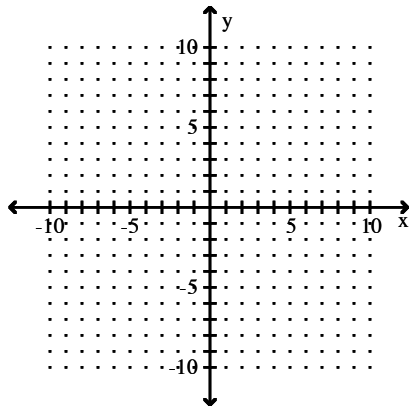
$$\begin{aligned} 7) \quad xy &= 12 \\ x + y &= 7 \end{aligned}$$

Determine whether the given function is one-to-one. If it is one-to-one, find its inverse.

$$8) f(x) = \frac{7}{x - 8}$$

Graph the function.

9) $f(x) = 2 - e^{-x}$



Find the sum.

$$10) 1 - \frac{3}{4} + \frac{9}{16} - \frac{27}{64} + \dots$$

Compute $\frac{f(x+h) - f(x)}{h}$ ($h \neq 0$) for the given function.

$$11) f(x) = 4x^2 + 4x$$

Solve the problem.

- 12) An open-top rectangular box has a square base and it will hold 108 cubic centimeters (cc). Each side of the base has length x cm, and the box has a height of y cm. Express the surface area S as a function of the length x of a side of the base.

Solve the exponential equation without using a calculator and approximate the result, correct to three decimal places.

13)
$$\frac{e^x + e^{-x}}{e^x - e^{-x}} = 12$$

Solve the equation by making an appropriate substitution.

14) $x^4 - 34x^2 - 72 = 0$

Solve the system of linear equations. If the equations are dependent, write your answer with z being arbitrary.

15)

$$\begin{cases} x - y + z = 8 \\ x + y + z = 6 \\ x + y - z = -12 \end{cases}$$

Solve the rational inequality. Write the solution in interval notation.

$$16) \frac{x}{x-4} < 4$$

Write the expression in condensed form.

$$17) \ln x - 3[2\ln(x-6) - \ln(x+6)]$$

Find the indicated term of the binomial expansion.

18) $(x - 2y)^9$; term containing x^2