1. A ______________________ experiment is an experiment that consists of n-independent trials of a Bernoulli experiment.

   The formula that goes with it, \( C(n,x) p^x q^{n-x} \), represents the probability of \( x \) successes.

3. Is the area of a standard normal curve larger or smaller than a normal curve with mean 10 and variance 4? ____________

4. What is the standard deviation of a standard normal curve? ______________

7. A company predicts that a person has a 0.02 probability of developing full blown diabetes if their medication is taken. A study of 200 individuals is done to test this assertion. If the assertion is believed to be true, then

   a) how many individuals from the group of 200 are expected to develop diabetes? ______________

   b) What is the probability that exactly 3 will develop diabetes? ______________

   c) Use a normal curve to approximate the probability that more than 4 will develop diabetes. ______________

8. True or False.

   a) A function is always a relation ______________

   b) All lines are functions ______________

   c) If a function has a limit at \( x = 2 \), then the function is always continuous at \( x = 2 \) ______________

9. We say that a function is continuous at \( x = 3 \) provided

   a) ______________

   b) ______________

   c) ______________

10. Prove that \( f(x) = \frac{x}{x + 1} \) is continuous at \( x = 2 \).
11. Find the points at which the following functions are discontinuous. (do only part a and d)

a) \( f(x) = \frac{x + 2}{x^2 - 4} \) if \( x < 2 \)

b) \( g(x) = \begin{cases} x^2 & \text{if } x \geq 2 \\ \rightarrow \text{________} & \rightarrow \text{________} \end{cases} \)

c) \( h(x) = \begin{cases} 2 & \text{if } x \neq 3 \\ x & \text{if } x = 2 \end{cases} \)

12. Which of these relations are also functions?

a) a circle with radius 3, center at the origin \( x^2 + y^2 = 9 \) _________________

b) a parabola that opens to the left \( y^2 = 2x \) _________________

c) \( y = \log_2 x \) _________________

13. What is the domain of

a) \( y = \log_4 x \) _________________

b) a circle with radius 2 and center at the point \((0, 2)\) _________________

c) \( y = |2x - 4| \) _________________

14. What is the range of

a) \( y = x^2 - 2x + 3 \) _________________

b) \( y = 3^x \) _________________

c) \( y = -2 \) _________________

d) \( y = |x + 2| \) _________________

15. Find the y-intercept of

a) \( y = x^2 - 2x - 3 \) _________________

b) \( y = 2x - 3 \) _________________
16. Given the following functions – answer the questions that follow.

- \( f(x) = \frac{x + 2}{x^2 - 4} \)
- \( g(x) = \begin{cases} x - 1 & \text{if } x < 2 \\ x^2 & \text{if } x \geq 2 \end{cases} \)
- \( h(x) = \begin{cases} 2 & \text{if } x \neq 3 \\ x & \text{if } x = 2 \end{cases} \)
- \( y(x) = -2 \)

a) \( f(-2) = \) ____________

b) \( \lim_{x \to 2} f(x) = \) ________

c) \( \lim_{x \to 2} g(x) = \) ________

d) \( g(0) = \) ___________

e) \( \lim_{x \to 2.1} g(x) = \) ________

f) \( \lim_{x \to 2} h(x) = \) __________

g) \( y(3) = \) ________

h) \( \lim_{x \to 3} y(x) = \) __________

17. Find each of the following limits

a) \( \lim_{h \to 4} h = \) ________

b) \( \lim_{x \to 2} 12 = \) ________

c) \( \lim_{x \to \infty} 3 = \) ________

d) \( \lim_{x \to \infty} x^2 = \) ________

e) \( \lim_{x \to 1} \frac{x}{x - 1} = \) ________

f) \( \lim_{x \to 3} \frac{x^2 - 2x - 3}{x - 3} = \) ________

g) \( \lim_{x \to \infty} \frac{x + 2}{x^2 + 4} = \) ________

h) \( \lim_{x \to \infty} \frac{x^2 + 2}{3x^3 + 4} = \) ________
18. Use the following figure to answer the questions that follow.

![Graph of a function with key points mentioned](image_url)

a) \( f(2) = \) ________

b) \( f(0) = \) ________

c) at what \( x \) is \( f(x) = 5 \) → ________

mark it on the graph

d) \( \lim_{x \to \infty} f(x) = \) ________

e) \( f(-2) = ? \) ________

On your test you will have a graph with a left and a right limit – If I remember to write it.

f) at what \( x \)'s is the function not continuous? ________

19. Find the derivative of \( f(x) \) if

a) \( f(x) = 2 \)

b) \( f(x) = 2x \)

c) \( f(x) = 1 - 3x \)

20. Let \( C(x) = 3x + 30 \) represent the cost of producing \( x \) items

\( R(x) = 5x - 60 \) represent the revenue generated by producing \( x \) items

a) Find the profit equation.

b) Find the marginal cost.

c) Find the cost in producing 10 items.