1. What is a partial differential equation?

A. A differential equation that contains one or more derivatives of a function with respect to two or more independent variables.
B. A differential equation that contains one or more derivatives of a function with respect to only one independent variable.
C. A differential equation that does not contain any derivatives of a function.

2. What is the order of a partial differential equation?

A. The highest order derivative of the function in the equation.
B. The highest order derivative of the independent variable in the equation.
C. The highest order derivative of the function in the equation divided by the highest order derivative of the independent variable in the equation.

3. What is a linear partial differential equation?

A. A partial differential equation in which the function and its derivatives are of first order.
B. A partial differential equation in which the function and its derivatives are of second order or higher.
C. A partial differential equation in which the function is of first order and its derivatives are of second order or higher.

4. What is a homogeneous partial differential equation?

A. A partial differential equation in which the function is of first order.
B. A partial differential equation in which the function is of second order or higher.
C. A partial differential equation in which the function and all of its derivatives are of the same order.

5. What is a separable partial differential equation?

A. A partial differential equation in which the function can be written as the product of two functions, each of which is a function of only one variable.
B. A partial differential equation in which the function can be written as the sum of two functions, each of which is a function of only one variable.
C. A partial differential equation in which the function can be written as the quotient of two functions, each of which is a function of only one variable.

6. What is an exact partial differential equation?

A. A partial differential equation for which there exists a function that satisfies the equation and its first partial derivatives.
B. A partial differential equation for which there exists a function that satisfies the equation and its second partial derivatives.
C. A partial differential equation for which there exists a function that satisfies the equation and all of its partial derivatives.

7. What is an approximate partial differential equation?

A. A partial differential equation for which there exists a function that satisfies the equation and its first partial derivatives.
B. A partial differential equation for which there exists a function that satisfies the equation and its second partial derivatives.
C. A partial differential equation for which there exists a function that satisfies the equation but not all of its partial derivatives.

8. What is a solution of a partial differential equation?

A. A function that satisfies the equation and its first partial derivatives.
B. A function that satisfies the equation and its second partial derivatives.
C. A function that satisfies the equation and all of its partial derivatives.

9. What is an integrating factor?

A. A function that can be used to transform a partial differential equation into an exact differential equation.
B. A function that can be used to transform a partial differential equation into a separable differential equation.
C. A function that can be used to transform a partial differential equation into a linear differential equation.

10. What is a characteristic curve?

A. A curve that is tangent to the direction field of a partial differential equation at every point.
B. A curve that is perpendicular to the direction field of a partial differential equation at every point.
C. A curve that is parallel to the direction field of a partial differential equation at every point.

11. What is a partial differential equation of the form $y = f(x)$?

A. A differential equation in which the function is a function of only one variable.
B. A differential equation in which the function is a function of two variables.
C. A differential equation in which the function is a function of more than two variables.

12. What is a partial differential equation of the form $y = f(x, y)$?

A. A differential equation in which the function is a function of only one variable.
B. A differential equation in which the function is a function of two variables.
C. A differential equation in which the function is a function of more than two variables.

13. What is a partial differential equation of the form $y = f(x, y, z)$?

A. A differential equation in which the function is a function of only one variable.
B. A differential equation in which the function is a function of two variables.
C. A differential equation in which the function is a function of three variables.

14. What is a first-order partial differential equation?

A. A differential equation in which the function and its derivatives are of first order.
B. A differential equation in which the function and its derivatives are of second order or higher.
C. A differential equation in which the function is of first order and its derivatives are of second order or higher.

15. What is a second-order partial differential equation?

A. A differential equation in which the function and its derivatives are of first order.
B. A differential equation in which the function and its derivatives are of second

order or higher.
C. A differential equation in which the function is of first order and its derivatives are of second order or higher.

16. What is a higher-order partial differential equation?

A. A differential equation in which the function and its derivatives are of first order.
B. A differential equation in which the function and its derivatives are of second order or higher.
C. A differential equation in which the function is of first order and its derivatives are of second order or higher.

17. What is a constant coefficient partial differential equation?

A. A differential equation in which the coefficients of the derivatives are constant.
B. A differential equation in which the coefficients of the function are constant.
C. A differential equation in which the coefficients of the independent variables are constant.

18. What is a variable coefficient partial differential equation?

A. A differential equation in which the coefficients of the derivatives are constant.
B. A differential equation in which the coefficients of the function are constant.
C. A differential equation in which the coefficients of the independent variables are constant.

19. What is a partial differential equation in canonical form?

A. A differential equation in which the highest order derivative of the function is equal to the highest order derivative of the independent variable.
B. A differential equation in which the highest order derivative of the function is equal to the product of the highest order derivative of the independent variable and a function of lower order derivatives of the function.
C. A differential equation in which the highest order derivative of the function is equal to the product of the highest order derivative of the independent variable and a function of lower order derivatives of the independent variable.

20. What is a partial differential equation in standard form?

A. A differential equation in which the highest order derivative of the function is equal to the highest order derivative of the independent variable.
B. A differential equation in which the highest order derivative of the function is equal to the product of the highest order derivative of the independent variable and a function of lower order derivatives of the function.
C. A differential equation in which the highest order derivative of the function is equal to the product of the highest order derivative of the independent variable and a function of lower order derivatives of the independent variable.

Answer Key:

1. A
2. A
3. C
4. C
5. A
6. C
7. C

8. C
9. A
10. A
11. B
12. B
13. C
14. A
15. B
16. B
17. A
18. C
19. B
20. B