MATH 2552 Differential Equations: Modeling with differential equations

1. What is a differential equation?

A. An equation that relates two or more derivatives of a function

B. An equation that relates a function and one or more of its derivatives

C. An equation that relates a function to another function

D. An equation that relates a function and its domain

2. What is the order of a differential equation?

A. The highest derivative that appears in the equation

B. The number of derivatives that appear in the equation

C. The number of terms in the equation

D. The number of variables in the equation

3. What is the degree of a differential equation?

A. The highest derivative that appears in the equation

B. The number of derivatives that appear in the equation

C. The number of terms in the equation

D. The number of variables in the equation

4. What is a linear differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

5. What is a homogeneous differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

6. What is a nonlinear differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

7. What is a separable differential equation?

A. An equation that can be written in the form of two functions that are each a function of one variable

B. An equation that can be written in the form of two functions that are each a function of two variables

C. An equation that can be written in the form of a function and its derivative

D. An equation that can be written in the form of a function and its domain

8. What is an exact differential equation?

A. An equation that can be written in the form of two functions that are each a function of one variable

B. An equation that can be written in the form of two functions that are each a function of two variables

C. An equation that can be written in the form of a function and its derivative

D. An equation that can be written in the form of a function and its domain

9. What is an integrating factor?

A. A function that can be used to solve a differential equation

B. A function that can be used to simplify a differential equation

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

D. A function that can be used to transform a differential equation into a separable differential equation

10. What is a Bernoulli differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

11. What is a Riccati differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

12. What is a Clairaut differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

13. What is a Lagrange differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

14. What is a Hamiltonian differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

15. What is a Legendre differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

16. What is a Jacobi differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

17. What is a Bessel differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

18. What is a Hermite differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

19. What is a Laguerre differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

20. What is a Laplace differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

21. What is a Fourier differential equation?

A. An equation in which the highest derivative is of first order

B. An equation in which the highest derivative is of second order

C. An equation in which the function and its derivatives are of first order

D. An equation in which the function and its derivatives are of second order

22. What is a heat equation?

A. An equation that describes the rate of change of temperature with respect to time

B. An equation that describes the rate of change of heat with respect to time

C. An equation that describes the rate of change of temperature with respect to space

D. An equation that describes the rate of change of heat with respect to space

23. What is a wave equation?

A. An equation that describes the rate of change of temperature with respect to time

B. An equation that describes the rate of change of heat with respect to time

C. An equation that describes the rate of change of temperature with respect to space

D. An equation that describes the rate of change of displacement with respect to space and time

24. What is a Laplace equation?

A. An equation that describes the rate of change of temperature with respect to time

B. An equation that describes the rate of change of heat with respect to time

C. An equation that describes the rate of change of displacement with respect to space

D. An equation that describes the rate of change of displacement with respect to space and time

25. What is a Helmholtz equation?

A. An equation that describes the rate of change of temperature with respect to time

B. An equation that describes the rate of change of heat with respect to time

C. An equation that describes the rate of change of displacement with respect to space

D. An equation that describes the rate of change of displacement with respect to space and time

1. B
2. A
3. B
4. D
5. D
6. D
7. A
8. C
9. C
10. D
11. D
12. D
13. D
14. D
15. D
16. D
17. D
18. D
19. D
20. D
21. D
22. C
23. D
24. C
25. D