

PRINTABLE VERSION

Quiz 5

You scored 20 out of 100

Question 1

Your answer is CORRECT.

Give the general solution of the differential equation

$$y'' + 9y = 2 \tan(3x)$$

- a) $y = C_1 e^{3x} + C_2 e^{-3x} - \frac{2}{9} \sin(3x) \ln(\sec(3x) + \tan(3x))$
- b) $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{2}{9} \sin(3x) \ln(\sec(3x) - \tan(3x))$
- c) $y = C_1 e^{3x} + C_2 e^{-3x} - \frac{2}{9} \cos(3x) \ln(\sec(3x) + \tan(3x))$
- d) $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{2}{9} \cos(3x) \ln(\sec(3x) + \tan(3x))$
- e) $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{2}{9} \sin(3x) \ln(\sec(3x) + \tan(3x))$
- f) None of the above.

Question 2

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 16y = 3 \sec(4x)$$

- a) $y = C_1 \sin(4x) + C_2 \cos(4x) + \frac{3}{4} x \sin(4x) + \frac{3}{16} \sin(4x) \ln(|\cos(4x)|)$
- b) $y = C_1 \sin(4x) + C_2 \cos(4x) + \frac{3}{4} x \sin(4x) + \frac{3}{16} \cos(4x) \ln(|\cos(4x)|)$
- c) $y = C_1 \sin(4x) + C_2 \cos(4x) + \frac{3}{4} x \cos(4x) + \frac{3}{16} \cos(4x) \ln(|\cos(4x)|)$
- d) $y = C_1 e^{4x} + C_2 e^{-4x} + \frac{3}{4} \sin(4x) + \frac{3}{16} \cos(4x) \ln(|\cos(4x)|)$

- e) $y = C_1 e^{4x} + C_2 e^{-4x} + \frac{3}{4} \sin(4x) + \frac{3}{16} \sin(4x) \ln(|\cos(4x)|)$
- f) None of the above.

Question 3

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' - 6y' + 9y = 4e^{3x} + \frac{e^{3x}}{x}$$

- a) $y = C_1 e^{-3x} + C_2 x e^{-3x} + 2e^{3x} + e^{3x} \ln(x)$
- b) $y = C_1 e^{3x} + C_2 x e^{3x} + 2x^2 e^{3x} - x e^{3x} \ln(x)$
- c) $y = C_1 e^{3x} + C_2 x e^{3x} + 2e^{3x} + e^{3x} \ln(x)$
- d) $y = C_1 e^{3x} + C_2 e^{-3x} + 2x e^{3x} + e^{3x} \ln(x)$
- e) $y = C_1 e^{3x} + C_2 x e^{3x} + 2x e^{3x} - x e^{3x} \ln(x)$
- f) None of the above.

Question 4

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' - 6y' + 9y = 2e^{3x} + \frac{e^{3x}}{x^2}$$

- a) $y = C_1 e^{3x} + C_2 x e^{3x} + x^2 e^{3x} + x e^{3x} \ln(x)$
- b) $y = C_1 e^{3x} + C_2 x e^{3x} - x^2 e^{3x} - e^{3x} \ln(x)$
- c) $y = C_1 e^{3x} + C_2 e^{-3x} + x e^{3x} - x e^{3x} \ln(x)$
- d) $y = C_1 e^{3x} + C_2 x e^{3x} + x^2 e^{3x} - e^{3x} \ln(x)$

e) $y = C_1 e^{-3x} + C_2 x e^{-3x} + x^2 e^{3x} + e^{3x} \ln(x)$

f) None of the above.

Question 5

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 4y = -4 \cos(3x) + 2 \sin(3x)$$

a) $y = C_1 \sin(2x) + C_2 \cos(2x) + \frac{4}{5} \cos(3x) - \frac{2}{5} \sin(3x)$

b) $y = C_1 \sin(2x) + C_2 \cos(2x) + \frac{4}{5} \cos(3x) + \frac{2}{5} \sin(3x)$

c) $y = C_1 e^{2x} + C_2 e^{-2x} + \frac{4}{5} \cos(3x) - \frac{2}{5} \sin(3x)$

d) $y = C_1 e^{2x} + C_2 e^{-2x} + \frac{4}{5} \cos(3x) + \frac{2}{5} \sin(3x)$

e) $y = C_1 \sin(2x) + C_2 \cos(2x) - \frac{2}{5} \cos(3x) - \frac{3}{5} x \sin(3x)$

f) None of the above.

Question 6

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 4y = -5 \cos(2x) + 3 \sin(2x)$$

a) $y = C_1 \sin(2x) + C_2 \cos(2x) - \frac{5}{4} x \sin(2x) + \frac{3}{4} \cos(2x)$

b) $y = C_1 \sin(2x) + C_2 \cos(2x) - \frac{5}{4} x \sin(2x) - \frac{3}{4} x \cos(2x)$

c) $y = C_1 e^{2x} + C_2 e^{-2x} + \frac{5}{4} x \sin(2x) + \frac{3}{4} x \cos(2x)$

d) $y = C_1 e^{2x} + C_2 e^{-2x} + \frac{5}{4} x \sin(2x) - \frac{3}{4} x \cos(2x)$

- e) $y = C_1 \sin(2x) + C_2 \cos(2x) - \frac{5}{4}x \sin(2x) - \frac{3}{4} \cos(2x)$
- f) None of the above.

Question 7

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' - y' - 12y = 2e^{-3x} + 2$$

- a) $y = C_1 e^{3x} + C_2 e^{4x} - \frac{2}{7}x e^{-3x} + \frac{1}{6}$
- b) $y = C_1 e^{-3x} + C_2 e^{4x} - \frac{2}{7}x e^{-3x} - \frac{1}{6}$
- c) $y = C_1 e^{-3x} + C_2 e^{-4x} - \frac{2}{7}x e^{-3x} + \frac{1}{6}$
- d) $y = C_1 e^{3x} + C_2 e^{-4x} - \frac{2}{7}e^{-3x} - \frac{1}{6}$
- e) $y = C_1 e^{-3x} + C_2 e^{4x} + \frac{2}{7}x e^{-3x} - 6$
- f) None of the above.

Question 8

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 4y' + 4y = 4x e^{-2x}$$

- a) $y = C_1 e^{-2x} + C_2 x e^{-2x} + \frac{2}{3} e^{-2x} x^3$
- b) $y = C_1 e^{-2x} + C_2 x e^{-2x} - \frac{2}{3} e^{-2x} x^3$
- c) $y = C_1 e^{-2x} + C_2 x e^{-2x} - \frac{4}{3} x^3 + 2x^2$
- d) $y = C_1 e^{-2x} + C_2 x e^{-2x} - \frac{4}{3} x^3 - 2x^2$

e) $y = C_1 e^{-2x} + C_2 x e^{-2x} + \frac{10}{3} e^{-2x} x^3$

f) None of the above.

Question 9

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 4y' + 4y = 5 e^{-2x} \cos(2x)$$

a) $y = C_1 e^{-2x} + C_2 x e^{-2x} - \frac{5}{2} x \sin(2x) - \frac{5}{4} \cos(2x) - \frac{5}{4} + \frac{5}{2} \sin(2x)$

b) $y = C_1 e^{-2x} + C_2 x e^{-2x} + \frac{5}{4} e^{-2x} \cos(2x) + \frac{5}{4} e^{-2x}$

c) $y = C_1 e^{-2x} + C_2 x e^{-2x} - 5 e^{-2x} x \sin(2x) - \frac{5}{4} e^{-2x} \cos(2x) - \frac{5}{4} e^{-2x}$

d) $y = C_1 e^{-2x} + C_2 x e^{-2x} - \frac{5}{2} x \sin(2x) - \frac{5}{4} \cos(2x) - \frac{5}{4} - \frac{5}{2} \sin(2x)$

e) $y = C_1 e^{-2x} + C_2 x e^{-2x} + 5 e^{-2x} x \sin(2x) + \frac{5}{4} e^{-2x} \cos(2x) + \frac{5}{4} e^{-2x}$

f) None of the above.

Question 10

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 9y' + 20y = 2 e^{5x}$$

a) $y = C_1 e^{5x} + C_2 e^{4x} + 2x + 2 e^x$

b) $y = C_1 e^{5x} + C_2 e^{4x} - 2 e^{5x} x + 2 e^{5x}$

c) $y = C_1 e^{5x} + C_2 e^{4x} + 2x - 2 e^x$

d) $y = C_1 e^{5x} + C_2 e^{4x} - 2 e^{5x} x - 2 e^{5x}$

e) $y = C_1 e^{5x} + C_2 e^{4x} + 2 e^{5x} x - 2 e^{5x}$

f) None of the above.

Question 11

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' - 3y' = 5 \sin(3x)$$

a) $y = C_1 + C_2 e^{3x} + \frac{5}{18} \cos(3x) - \frac{5}{18} \sin(3x)$

b) $y = C_1 + C_2 e^{3x} - \frac{5}{18} \cos(3x) + \frac{5}{18} \sin(3x)$

c) $y = C_1 + C_2 e^{3x} + \frac{5}{9} \cos(3x) - \frac{5}{18} e^{-3x} \cos(3x) - \frac{5}{18} e^{-3x} \sin(3x)$

d) $y = C_1 + C_2 e^{3x} + \frac{5}{9} \cos(3x) + \frac{5}{18} e^{-3x} \cos(3x) + \frac{5}{18} e^{-3x} \sin(3x)$

e) $y = C_1 + C_2 e^{3x} - \frac{5}{6} \cos(3x) - \frac{5}{18} \sin(3x)$

f) None of the above.

Question 12

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y''' - 3y' - 10y = 3x + 2$$

a) $y = C_1 e^{-2x} + C_2 e^{5x} + \frac{11}{100} + \frac{3}{10} x$

b) $y = C_1 e^{-2x} + C_2 e^{5x} + \frac{27}{700} - \frac{9}{70} x$

c) $y = C_1 e^{-2x} + C_2 e^{5x} + \frac{129}{700} + \frac{27}{70} x$

d) $y = C_1 e^{-2x} + C_2 e^{5x} - \frac{129}{700} - \frac{27}{70} x$

e) $y = C_1 e^{-2x} + C_2 e^{5x} - \frac{27}{700} + \frac{9}{70} x$

f) None of the above.

Question 13**Your answer is INCORRECT.**

Give the general solution of the differential equation

$$y'' + y' - 2y = x^3 + 3x$$

- a) $y = C_1 e^x + C_2 e^{-2x} + \frac{9}{4} + \frac{9}{2}x + \frac{1}{2}x^2 + \frac{2}{3}x^3$
- b) $y = C_1 e^x + C_2 e^{-2x} + \frac{21}{8} + \frac{15}{4}x + \frac{3}{4}x^2 + \frac{1}{2}x^3$
- c) $y = C_1 e^x + C_2 e^{-2x} - \frac{21}{8} - \frac{15}{4}x - \frac{3}{4}x^2 - \frac{1}{2}x^3$
- d) $y = C_1 e^x + C_2 e^{-2x} - \frac{9}{4} - \frac{9}{2}x - \frac{1}{2}x^2 - \frac{2}{3}x^3$
- e) $y = C_1 e^x + C_2 e^{-2x} + \frac{27}{8} + \frac{9}{4}x + \frac{5}{4}x^2 + \frac{1}{6}x^3$
- f) None of the above.

Question 14**Your answer is INCORRECT.**

Give the general solution of the differential equation

$$y'' - 2y' + 10y = e^{-x} \sin(3x)$$

- a) $y = \frac{3}{40} \cos(3x) e^{-x} + \frac{1}{40} e^{-x} \sin(3x) + C_1 e^x \cos(3x) + C_2 e^x \sin(3x)$
- b) $y = -\frac{3}{40} \cos(3x) e^{-x} - \frac{1}{40} e^{-x} \sin(3x) + C_1 e^x \cos(3x) + C_2 e^x \sin(3x)$
- c) $y = \frac{3}{40} \cos(3x) e^{-x} + \frac{1}{40} e^{-x} \sin(3x) + C_1 e^{3x} \cos(x) + C_2 e^{3x} \sin(x)$
- d) $y = -\frac{3}{40} \cos(3x) e^{-x} - \frac{1}{40} e^{-x} \sin(3x) + C_1 e^{3x} \cos(x) + C_2 e^{3x} \sin(x)$
- e) $y = \frac{3}{40} \cos(3x) e^{-x} + \frac{1}{40} e^{-x} \sin(3x) + C_2 \sin(3x) + \cos(x) C_1$
- f) None of the above.

Question 15

Your answer is **CORRECT**.

Give the general solution of the differential equation

$$y'' + 2y' + 10y = e^{3x} \cos(x)$$

- a) $y = C_1 e^{-x} \cos(3x) + C_2 e^{-x} \sin(3x) + \frac{3}{80} e^{3x} \cos(x) + \frac{1}{80} \sin(x) e^{3x}$
- b) $y = C_1 e^{-x} \cos(3x) + C_2 e^{-x} \sin(3x) - \frac{3}{80} e^{3x} \cos(x) - \frac{1}{80} \sin(x) e^{3x}$
- c) $y = C_1 e^{3x} \cos(x) + C_2 e^{3x} \sin(x) + \frac{3}{80} e^{3x} \cos(x) + \frac{1}{80} \sin(x) e^{3x}$
- d) $y = C_1 e^{3x} \cos(x) + C_2 e^{3x} \sin(x) - \frac{3}{80} e^{3x} \cos(x) - \frac{1}{80} \sin(x) e^{3x}$
- e) $y = \frac{3}{80} e^{3x} \cos(x) + \frac{1}{80} \sin(x) e^{3x} + C_2 \sin(3x) + \cos(x) C_1$
- f) None of the above.

Question 16

Your answer is **INCORRECT**.

Find the solution of the given initial-value problem.

$$y'' - 2y' - 8y = 4x$$

$$[y(0) = 0, y'(0) = 3]$$

- a) $y = -\frac{2}{3} e^{-2x} + \frac{13}{24} e^{4x} + \frac{1}{8} - \frac{1}{2} x$
- b) $y = -\frac{2}{3} e^{-2x} + \frac{13}{24} e^{4x} - \frac{1}{8} + \frac{1}{2} x$
- c) $y = \frac{13}{24} e^{-2x} + \frac{2}{3} e^{4x} + \frac{1}{8} - \frac{1}{2} x$
- d) $y = \frac{13}{24} e^{-2x} - \frac{2}{3} e^{4x}$
- e) $y = -\frac{2}{3} e^{-2x} - \frac{13}{24} e^{4x}$
- f) None of the above.

Question 17

Your answer is CORRECT.

Find the solution of the given initial-value problem.

$$y'' + 4y = x^2 + 6e^x$$

$$[y(0) = 1, y'(0) = 5]$$

- a) $y = \frac{19}{10} \cos(2x) + \frac{3}{40} \sin(2x) + \frac{1}{4} x^2 - \frac{1}{8} + \frac{6}{5} e^x$
- b) $y = -\frac{3}{40} \cos(2x) + \frac{19}{10} \sin(2x) - \frac{1}{4} x^2 + \frac{1}{8} - \frac{6}{5} e^x$
- c) $y = -\frac{3}{40} \cos(2x) + \frac{19}{10} \sin(2x) + \frac{1}{4} x^2 - \frac{1}{8} + \frac{6}{5} e^x$
- d) $y = \frac{19}{10} \cos(2x) - \frac{3}{40} \sin(2x)$
- e) $y = -\frac{3}{40} \cos(2x) - \frac{19}{10} \sin(2x)$
- f) None of the above.

Question 18

Your answer is CORRECT.

Find the solution of the given initial-value problem.

$$y'' - 3y' + 2y = \sin(2x)$$

$$[y(0) = 1, y'(0) = -3]$$

- a) $y = -\frac{15}{4} e^{2x} + \frac{3}{20} \cos(2x) - \frac{1}{20} \sin(2x) + \frac{23}{5} e^x$
- b) $y = -\frac{15}{4} e^{2x} - \frac{3}{20} \cos(2x) + \frac{1}{20} \sin(2x) + \frac{23}{5} e^x$
- c) $y = -\frac{23}{5} e^{2x} + \frac{3}{20} \cos(2x) - \frac{1}{20} \sin(2x) - \frac{15}{4} e^x$
- d) $y = -\frac{15}{4} e^x + \frac{23}{5} e^{2x}$
- e) $y = \frac{23}{5} e^x + \frac{15}{4} e^{2x}$
- f) None of the above.

Question 19

Your answer is INCORRECT.

Give the form of a particular solution of the differential equation

$$y'' - 2y' - 8y = 2 \cos(3x) - 3e^{-2x} - 3$$

- a) $z = A \cos(3x) + C e^{-2x} + Ex$
- b) $z = A \cos(3x) + Bx e^{-2x} + C$
- c) $z = A \cos(3x) + B \sin(3x) + C e^{-2x} + E$
- d) $z = A \cos(3x) + B e^{-2x} + C$
- e) $z = A \cos(3x) + B \sin(3x) + C e^{-2x} + Ex$
- f) None of the above.

Question 20

Your answer is INCORRECT.

Give the form of a particular solution of the differential equation

$$y'' + 6y' + 9y = e^{-2x} \sin(4x) - 2e^{-3x} - 3x$$

- a) $z = A e^{-2x} \sin(4x) + C e^{-3x} + Ex$
- b) $z = A e^{-2x} \sin(4x) + Cx^2 e^{-3x} + Ex$
- c) $z = A e^{-2x} \sin(4x) + C e^{-3x} + Ex + F$
- d) $z = A e^{-2x} \cos(4x) + B e^{-2x} \sin(4x) + Cx e^{-3x} + Ex + F$
- e) $z = A e^{-2x} \cos(4x) + B e^{-2x} \sin(4x) + Cx^2 e^{-3x} + Ex + F$
- f) None of the above.