

PRINTABLE VERSION

Quiz 5

You scored 35 out of 100

Question 1

Your answer is **CORRECT**.

Give the general solution of the differential equation

$$y'' + 25y = 2 \tan(5x)$$

- a) $y = C_1 \sin(5x) + C_2 \cos(5x) - \frac{2}{25} \sin(5x) \ln(\sec(5x) - \tan(5x))$
- b) $y = C_1 \sin(5x) + C_2 \cos(5x) - \frac{2}{25} \sin(5x) \ln(\sec(5x) + \tan(5x))$
- c) $y = C_1 \sin(5x) + C_2 \cos(5x) - \frac{2}{25} \cos(5x) \ln(\sec(5x) + \tan(5x))$
- d) $y = C_1 e^{5x} + C_2 e^{-5x} - \frac{2}{25} \cos(5x) \ln(\sec(5x) + \tan(5x))$
- e) $y = C_1 e^{5x} + C_2 e^{-5x} - \frac{2}{25} \sin(5x) \ln(\sec(5x) + \tan(5x))$
- f) None of the above.

Question 2

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 9y = 4 \sec(3x)$$

- a) $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{4}{3} x \sin(3x) + \frac{4}{9} \sin(3x) \ln(|\cos(3x)|)$
- b) $y = C_1 e^{3x} + C_2 e^{-3x} + \frac{4}{3} x \sin(3x) - \frac{4}{9} \cos(3x) \ln(|\cos(3x)|)$
- c) $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{4}{3} x \cos(3x) + \frac{4}{9} \cos(3x) \ln(|\cos(3x)|)$
- d) $y = C_1 e^{3x} + C_2 e^{-3x} + \frac{4}{3} \sin(3x) + \frac{4}{9} \cos(3x) \ln(|\cos(3x)|)$

- e) $y = C_1 e^{3x} + C_2 e^{-3x} + \frac{4}{3} \sin(3x) + \frac{4}{9} \sin(3x) \ln(|\cos(3x)|)$
- f) None of the above.

Question 3

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' - 10y' + 25y = -2e^{5x} + \frac{e^{5x}}{x}$$

- a) $y = C_1 e^{5x} + C_2 e^{-5x} - x e^{5x} + e^{5x} \ln(x)$
- b) $y = C_1 e^{-5x} + C_2 x e^{-5x} - e^{5x} + e^{5x} \ln(x)$
- c) $y = C_1 e^{5x} + C_2 x e^{5x} - e^{5x} + e^{5x} \ln(x)$
- d) $y = C_1 e^{5x} + C_2 x e^{5x} - x e^{5x} - x e^{5x} \ln(x)$
- e) $y = C_1 e^{5x} + C_2 x e^{5x} - x^2 e^{5x} - x e^{5x} \ln(x)$
- f) None of the above.

Question 4

Your answer is **CORRECT**.

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

$$y'' + 16y = -3 \cos(4x) + 2 \sin(4x)$$

a) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{3}{8} x \sin(4x) - \frac{1}{4} \cos(4x)$

b) $y = C_1 e^{4x} + C_2 e^{-4x} + \frac{3}{8} x \sin(4x) + \frac{1}{4} x \cos(4x)$

c) $y = C_1 e^{4x} + C_2 e^{-4x} + \frac{3}{8} x \sin(4x) - \frac{1}{4} x \cos(4x)$

d) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{3}{8} x \sin(4x) - \frac{1}{4} x \cos(4x)$

- e) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{3}{8}x \sin(4x) + \frac{1}{4} \cos(4x)$
- f) None of the above.

Question 7**Your answer is INCORRECT.**

Give the general solution of the differential equation

$$y'' - 2y' - 8y = 2e^{-2x} + 3$$

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

Question 8**Your answer is CORRECT.**

Give the general solution of the differential equation

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

- a) $y = C_1 e^{-3x} + C_2 x e^{-3x} - x^3 - \frac{3}{2}x^2$
- b) $y = C_1 e^{-3x} + C_2 x e^{-3x} - \frac{1}{2}e^{-3x}x^3$
- c) $y = C_1 e^{-3x} + C_2 x e^{-3x} - x^3 + \frac{3}{2}x^2$
- d) $y = C_1 e^{-3x} + C_2 x e^{-3x} + \frac{5}{2}e^{-3x}x^3$

e) $y = C_1 e^{-3x} + C_2 x e^{-3x} + \frac{1}{2} e^{-3x} x^3$

f) None of the above.

Question 9

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{3x} + C_2 x e^{3x} - \frac{2}{9} \cos(3x) - \frac{2}{3} x \sin(3x) + \frac{2}{3} \sin(3x)$

b) $y = C_1 e^{3x} + C_2 x e^{3x} + \frac{2}{9} e^{3x} \cos(3x)$

c) $y = C_1 e^{3x} + C_2 x e^{3x} - \frac{2}{9} e^{3x} \cos(3x) - \frac{4}{3} x e^{3x} \sin(3x)$

d) $y = C_1 e^{3x} + C_2 x e^{3x} - \frac{2}{9} \cos(3x) - \frac{2}{3} x \sin(3x) - \frac{2}{3} \sin(3x)$

e) $y = C_1 e^{3x} + C_2 x e^{3x} + \frac{2}{9} e^{3x} \cos(3x) + \frac{4}{3} x e^{3x} \sin(3x)$

f) None of the above.

Question 10

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 2y' - 8y = 5e^{2x}$$

a) $y = C_1 e^{2x} + C_2 e^{-4x} + \frac{5}{6} x - \frac{5}{36} e^{6x}$

b) $y = C_1 e^{2x} + C_2 e^{-4x} - \frac{5}{6} e^{2x} x + \frac{5}{36} e^{2x}$

c) $y = C_1 e^{2x} + C_2 e^{-4x} + \frac{5}{6} e^{2x} x - \frac{5}{36} e^{2x}$

d) $y = C_1 e^{2x} + C_2 e^{-4x} + \frac{5}{6} x + \frac{5}{36} e^{6x}$

e) $y = C_1 e^{2x} + C_2 e^{-4x} - \frac{5}{6} e^{2x} x - \frac{5}{36} e^{2x}$

f) None of the above.

Question 11

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 + C_2 e^{2x} - \frac{3}{8} \cos(2x) + \frac{3}{8} \sin(2x)$

b) $y = C_1 + C_2 e^{2x} + \frac{3}{8} \cos(2x) - \frac{3}{8} \sin(2x)$

c) $y = C_1 + C_2 e^{2x} + \frac{3}{4} \cos(2x) - \frac{3}{8} e^{-2x} \cos(2x) - \frac{3}{8} e^{-2x} \sin(2x)$

d) $y = C_1 + C_2 e^{2x} + \frac{3}{4} \cos(2x) + \frac{3}{8} e^{-2x} \cos(2x) + \frac{3}{8} e^{-2x} \sin(2x)$

e) $y = C_1 + C_2 e^{2x} - \frac{9}{8} \cos(2x) - \frac{3}{8} \sin(2x)$

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

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

a) $y = C_1 e^x + C_2 e^{-2x} - \frac{23}{12} - \frac{19}{6} x - \frac{1}{2} x^2 - \frac{2}{3} x^3$

b) $y = C_1 e^x + C_2 e^{-2x} + \frac{17}{8} + \frac{11}{4} x + \frac{3}{4} x^2 + \frac{1}{2} x^3$

c) $y = C_1 e^x + C_2 e^{-2x} + \frac{23}{12} + \frac{19}{6} x + \frac{1}{2} x^2 + \frac{2}{3} x^3$

d) $y = C_1 e^x + C_2 e^{-2x} + \frac{61}{24} + \frac{23}{12} x + \frac{5}{4} x^2 + \frac{1}{6} x^3$

e) $y = C_1 e^x + C_2 e^{-2x} - \frac{17}{8} - \frac{11}{4} x - \frac{3}{4} x^2 - \frac{1}{2} x^3$

f) None of the above.

Question 14

Your answer is **CORRECT**.

Give the general solution of the differential equation

$$y'' - 4y' + 20y = 2e^{-2x} \sin(4x)$$

a) $y = \frac{1}{20} e^{-2x} \cos(4x) + \frac{1}{40} e^{-2x} \sin(4x) + \cos(2x) C_1 + C_2 \sin(4x)$

b) $y = C_1 e^{4x} \cos(2x) + C_2 e^{4x} \sin(2x) + \frac{1}{20} e^{-2x} \cos(4x) + \frac{1}{40} e^{-2x} \sin(4x)$

c) $y = C_1 e^{4x} \cos(2x) + C_2 e^{4x} \sin(2x) - \frac{1}{20} e^{-2x} \cos(4x) - \frac{1}{40} e^{-2x} \sin(4x)$

d) $y = C_1 e^{2x} \cos(4x) + C_2 e^{2x} \sin(4x) + \frac{1}{20} e^{-2x} \cos(4x) + \frac{1}{40} e^{-2x} \sin(4x)$

- e) $y = C_1 e^{2x} \cos(4x) + C_2 e^{2x} \sin(4x) - \frac{1}{20} e^{-2x} \cos(4x) - \frac{1}{40} e^{-2x} \sin(4x)$
- f) None of the above.

Question 15**Your answer is INCORRECT.**

Give the general solution of the differential equation

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

- a) $y = C_1 e^x \cos(2x) + C_2 e^x \sin(2x) - \frac{1}{30} e^x \cos(2x) - \frac{1}{15} \sin(2x) e^x$
- b) $y = C_1 e^{-2x} \cos(x) + C_2 e^{-2x} \sin(x) - \frac{1}{30} e^x \cos(2x) - \frac{1}{15} \sin(2x) e^x$
- c) $y = C_1 e^x \cos(2x) + C_2 e^x \sin(2x) + \frac{1}{30} e^x \cos(2x) + \frac{1}{15} \sin(2x) e^x$
- d) $y = \frac{1}{30} e^x \cos(2x) + \frac{1}{15} \sin(2x) e^x + \cos(2x) C_1 + C_2 \sin(x)$
- e) $y = C_1 e^{-2x} \cos(x) + C_2 e^{-2x} \sin(x) + \frac{1}{30} e^x \cos(2x) + \frac{1}{15} \sin(2x) e^x$
- f) None of the above.

Question 16**Your answer is INCORRECT.**

Find the solution of the given initial-value problem.

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

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

- a) $y = \frac{7}{8} e^{-2x}$
- b) $y = -\frac{1}{8} + \frac{7}{8} e^{4x} + \frac{1}{2} x$
- c) $y = \frac{7}{8} e^{-2x} + \frac{1}{8} - \frac{1}{2} x$
- d) $y = -\frac{7}{8} e^{4x}$

e) $y = \frac{1}{8} + \frac{7}{8} e^{4x} - \frac{1}{2} x$

f) None of the above.

Question 17

Your answer is CORRECT.

Find the solution of the given initial-value problem.

$$y'' + 4y = x^2 + 5e^x$$

$$[y(0) = 1, y'(0) = 4]$$

a) $y = \frac{3}{2} \cos(2x) - \frac{1}{8} \sin(2x) + \frac{1}{4} x^2 - \frac{1}{8} + e^x$

b) $y = \frac{1}{8} \cos(2x) + \frac{3}{2} \sin(2x) - \frac{1}{4} x^2 + \frac{1}{8} - e^x$

c) $y = \frac{1}{8} \cos(2x) + \frac{3}{2} \sin(2x) + \frac{1}{4} x^2 - \frac{1}{8} + e^x$

d) $y = \frac{3}{2} \cos(2x) + \frac{1}{8} \sin(2x)$

e) $y = \frac{1}{8} \cos(2x) - \frac{3}{2} \sin(2x)$

f) None of the above.

Question 18

Your answer is CORRECT.

Find the solution of the given initial-value problem.

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

$$[y(0) = 0, y'(0) = 2]$$

a) $y = \frac{1}{20} \cos(2x) - \frac{3}{20} \sin(2x) + \frac{3}{4} e^{-x} + \frac{4}{5} e^{2x}$

b) $y = -\frac{1}{20} \cos(2x) + \frac{3}{20} \sin(2x) - \frac{4}{5} e^{-x} + \frac{3}{4} e^{2x}$

c) $y = \frac{1}{20} \cos(2x) - \frac{3}{20} \sin(2x) - \frac{4}{5} e^{-x} + \frac{3}{4} e^{2x}$

d) $y = \frac{3}{4} e^{-x} - \frac{4}{5} e^{2x}$

e) $y = -\frac{4}{5}e^{-x} - \frac{3}{4}e^{2x}$

f) None of the above.

Question 19

Your answer is **INCORRECT**.

Give the form of a particular solution of the differential equation

$$y'' - y' - 20y = 3 \cos(2x) - 2e^{-4x} + 2$$

a) $z = A \cos(2x) + B \sin(2x) + C e^{-4x} + E$

b) $z = A \cos(2x) + B x e^{-4x} + C$

c) $z = A \cos(2x) + B \sin(2x) + C x e^{-4x} + E$

d) $z = A \cos(2x) + B e^{-4x} + C$

e) $z = A \cos(2x) + B \sin(2x) + C e^{-4x} + E x$

f) None of the above.

Question 20

Your answer is **CORRECT**.

Give the form of a particular solution of the differential equation

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

a) $z = A e^{-2x} \sin(4x) + C e^{-3x} + E x$

b) $z = A e^{-2x} \sin(4x) + C x^2 e^{-3x} + E x$

c) $z = A e^{-2x} \sin(4x) + C e^{-3x} + E x + F$

d) $z = A e^{-2x} \cos(4x) + B e^{-2x} \sin(4x) + C x e^{-3x} + E x + F$

e) $z = A e^{-2x} \cos(4x) + B e^{-2x} \sin(4x) + C x^2 e^{-3x} + E x + F$

f) None of the above.