

# PRINTABLE VERSION

## Quiz 5

You scored 15 out of 100

### Question 1

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 9y = -5 \tan(3x)$$

- a)   $y = C_1 e^{3x} + C_2 e^{-3x} + \frac{5}{9} \sin(3x) \ln(\sec(3x) + \tan(3x))$
- b)   $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{5}{9} \sin(3x) \ln(\sec(3x) - \tan(3x))$
- c)   $y = C_1 e^{3x} + C_2 e^{-3x} + \frac{5}{9} \cos(3x) \ln(\sec(3x) + \tan(3x))$
- d)   $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{5}{9} \cos(3x) \ln(\sec(3x) + \tan(3x))$
- e)   $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{5}{9} \sin(3x) \ln(\sec(3x) + \tan(3x))$
- f)  None of the above.

### Question 2

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 4y = -4 \sec(2x)$$

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

- e)   $y = C_1 e^{2x} + C_2 e^{-2x} - 2 \sin(2x) - \sin(2x) \ln(|\cos(2x)|)$
- 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 **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

$$y'' + 9y = 4 \cos(6x) + 2 \sin(6x)$$

a)   $y = C_1 e^{3x} + C_2 e^{-3x} - \frac{4}{27} \cos(6x) + \frac{2}{27} \sin(6x)$

b)   $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{4}{27} \cos(6x) + \frac{2}{27} \sin(6x)$

c)   $y = C_1 e^{3x} + C_2 e^{-3x} - \frac{4}{27} \cos(6x) - \frac{2}{27} \sin(6x)$

d)   $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{2}{27} \cos(6x) - \frac{2}{9} x \sin(6x)$

e)   $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{4}{27} \cos(6x) - \frac{2}{27} \sin(6x)$

f)  None of the above.

### Question 6

Your answer is **INCORRECT**.

Give the general solution of the differential equation

$$y'' + 36y = -4 \cos(6x) + 3 \sin(6x)$$

a)   $y = C_1 \sin(6x) + C_2 \cos(6x) - \frac{1}{3} x \sin(6x) - \frac{1}{4} x \cos(6x)$

b)   $y = C_1 \sin(6x) + C_2 \cos(6x) - \frac{1}{3} x \sin(6x) + \frac{1}{4} \cos(6x)$

c)   $y = C_1 e^{6x} + C_2 e^{-6x} + \frac{1}{3} x \sin(6x) + \frac{1}{4} x \cos(6x)$

d)   $y = C_1 e^{6x} + C_2 e^{-6x} + \frac{1}{3} x \sin(6x) - \frac{1}{4} x \cos(6x)$

- e)   $y = C_1 \sin(6x) + C_2 \cos(6x) - \frac{1}{3}x \sin(6x) - \frac{1}{4} \cos(6x)$
- 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 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

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

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

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

a)   $y = C_1 e^{-2x} + C_2 e^{4x} - \frac{1}{3} e^{-2x} x - \frac{1}{18} e^{-2x}$

b)   $y = C_1 e^{-2x} + C_2 e^{4x} + \frac{1}{3} e^{-2x} x + \frac{1}{18} e^{-2x}$

c)   $y = C_1 e^{-2x} + C_2 e^{4x} - \frac{1}{3} x - \frac{1}{18} e^{-6x}$

d)   $y = C_1 e^{-2x} + C_2 e^{4x} - \frac{1}{3} x + \frac{1}{18} e^{-6x}$

e)   $y = C_1 e^{-2x} + C_2 e^{4x} + \frac{1}{3} e^{-2x} x - \frac{1}{18} e^{-2x}$

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

$$y'' + 4y' + 3y = 3x + 2$$

a)   $y = C_1 e^{-x} + C_2 e^{-3x} - \frac{5}{6} + \frac{1}{2} x$

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

c)   $y = C_1 e^{-x} + C_2 e^{-3x} + \frac{5}{6} - \frac{1}{2} x$

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

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

f)  None of the above.

### Question 13

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a)   $y = C_1 e^x + C_2 e^{-2x} + \frac{19}{8} + \frac{13}{4}x + \frac{3}{4}x^2 + \frac{1}{2}x^3$

b)   $y = C_1 e^x + C_2 e^{-2x} - \frac{19}{8} - \frac{13}{4}x - \frac{3}{4}x^2 - \frac{1}{2}x^3$

c)   $y = C_1 e^x + C_2 e^{-2x} + \frac{25}{12} + \frac{23}{6}x + \frac{1}{2}x^2 + \frac{2}{3}x^3$

d)   $y = C_1 e^x + C_2 e^{-2x} - \frac{25}{12} - \frac{23}{6}x - \frac{1}{2}x^2 - \frac{2}{3}x^3$

e)   $y = C_1 e^x + C_2 e^{-2x} + \frac{71}{24} + \frac{25}{12}x + \frac{5}{4}x^2 + \frac{1}{6}x^3$

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

$$y'' + 4y' + 13y = e^{3x} \cos(2x)$$

- a)   $y = C_1 e^{3x} \cos(2x) + C_2 e^{3x} \sin(2x) + \frac{3}{130} e^{3x} \cos(2x) + \frac{1}{65} \sin(2x) e^{3x}$
- b)   $y = C_1 e^{-2x} \cos(3x) + C_2 e^{-2x} \sin(3x) - \frac{3}{130} e^{3x} \cos(2x) - \frac{1}{65} \sin(2x) e^{3x}$
- c)   $y = C_1 e^{-2x} \cos(3x) + C_2 e^{-2x} \sin(3x) + \frac{3}{130} e^{3x} \cos(2x) + \frac{1}{65} \sin(2x) e^{3x}$
- d)   $y = C_1 e^{3x} \cos(2x) + C_2 e^{3x} \sin(2x) - \frac{3}{130} e^{3x} \cos(2x) - \frac{1}{65} \sin(2x) e^{3x}$
- e)   $y = \frac{3}{130} e^{3x} \cos(2x) + \frac{1}{65} \sin(2x) e^{3x} + \cos(2x) C_1 + C_2 \sin(3x)$
- f)  None of the above.

**Question 16****Your answer is CORRECT.**

Find the solution of the given initial-value problem.

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

$$[y(0) = 1, y'(0) = 2]$$

- a)   $y = -\frac{5}{12} e^{-2x} - \frac{5}{3} e^x$
- b)   $y = \frac{5}{3} e^{-2x} + \frac{5}{12} e^x - \frac{1}{4} - \frac{1}{2} x$
- c)   $y = \frac{5}{3} e^{-2x} - \frac{5}{12} e^x$
- d)   $y = -\frac{5}{12} e^{-2x} + \frac{5}{3} e^x - \frac{1}{4} - \frac{1}{2} x$

e)   $y = -\frac{5}{12} e^{-2x} + \frac{5}{3} e^x + \frac{1}{4} + \frac{1}{2} x$

f)  None of the above.

### Question 17

Your answer is INCORRECT.

Find the solution of the given initial-value problem.

$$y'' + 9y = x^2 + 5e^x$$

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

a)   $y = -\frac{77}{162} \cos(3x) + \frac{7}{6} \sin(3x) - \frac{1}{9} x^2 + \frac{2}{81} - \frac{1}{2} e^x$

b)   $y = -\frac{77}{162} \cos(3x) + \frac{7}{6} \sin(3x) + \frac{1}{9} x^2 - \frac{2}{81} + \frac{1}{2} e^x$

c)   $y = \frac{7}{6} \cos(3x) + \frac{77}{162} \sin(3x) + \frac{1}{9} x^2 - \frac{2}{81} + \frac{1}{2} e^x$

d)   $y = \frac{7}{6} \cos(3x) - \frac{77}{162} \sin(3x)$

e)   $y = -\frac{77}{162} \cos(3x) - \frac{7}{6} \sin(3x)$

f)  None of the above.

### Question 18

Your answer is INCORRECT.

Find the solution of the given initial-value problem.

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

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

a)   $y = -\frac{7}{4} e^{2x} - \frac{3}{20} \cos(2x) + \frac{1}{20} \sin(2x) + \frac{8}{5} e^x$

b)   $y = \frac{7}{4} e^{2x} + \frac{3}{20} \cos(2x) - \frac{1}{20} \sin(2x) + \frac{8}{5} e^x$

c)   $y = -\frac{8}{5} e^{2x} + \frac{3}{20} \cos(2x) - \frac{1}{20} \sin(2x) - \frac{7}{4} e^x$

d)   $y = -\frac{7}{4} e^x + \frac{8}{5} e^{2x}$

e)   $y = \frac{8}{5} e^x + \frac{7}{4} e^{2x}$

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)   $z = A \cos(3x) + Ce^{-2x} + Ex$

b)   $z = A \cos(3x) + Bxe^{-2x} + C$

c)   $z = A \cos(3x) + B \sin(3x) + Ce^{-2x} + E$

d)   $z = A \cos(3x) + Be^{-2x} + C$

e)   $z = A \cos(3x) + B \sin(3x) + Ce^{-2x} + Ex$

f)  None of the above.

### Question 20

Your answer is **INCORRECT**.

Give the form of a particular solution of the differential equation

$$y'' - 10y' + 25y = e^{-4x} \sin(4x) - 3e^{5x} + 4x$$

a)   $z = Ae^{-4x} \sin(4x) + Ce^{5x} + Ex$

b)   $z = Ae^{-4x} \sin(4x) + Cx^2 e^{5x} + Ex$

c)   $z = Ae^{-4x} \sin(4x) + Ce^{5x} + Ex + F$

d)   $z = Ae^{-4x} \cos(4x) + Be^{-4x} \sin(4x) + Cxe^{5x} + Ex + F$

e)   $z = Ae^{-4x} \cos(4x) + Be^{-4x} \sin(4x) + Cxe^{5x} + Ex$

f)  None of the above.