PRINTABLE VERSION

Quiz 5

You scored 15 out of 100

Question 1

Your answer is CORRECT.

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

$$y'' + 16y = -5\sec(4x)$$

a) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{5}{4}x\cos(4x) - \frac{5}{16}\cos(4x)\ln(|\cos(4x)|)$

b) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{5}{4}x\sin(4x) - \frac{5}{16}\sin(4x)\ln(|\cos(4x)|)$

c) $y = C_1 e^{4x} + C_2 e^{-4x} - \frac{5}{4}x\sin(4x) + \frac{5}{16}\cos(4x)\ln(|\cos(4x)|)$

d) $y = C_1 e^{4x} + C_2 e^{-4x} - \frac{5}{4}\sin(4x) - \frac{5}{16}\cos(4x)\ln(|\cos(4x)|)$

e) $y = C_1 e^{4x} + C_2 e^{-4x} - \frac{5}{4}\sin(4x) - \frac{5}{16}\sin(4x)\ln(|\cos(4x)|)$

f) None of the above.

Question 3

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 10y' + 25y = -3e^{5x} + \frac{e^{5x}}{x}$$

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

b) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{3}{2}e^{5x} + e^{5x}\ln(x)$

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

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

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

f) None of the above.

Question 4

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

f) None of the above.

Question 5

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 9y = 4\cos(5x) - 3\sin(5x)$$

a) $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{1}{4}\cos(5x) - \frac{3}{16}\sin(5x)$

b) $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{1}{4}\cos(5x) - \frac{3}{16}\sin(5x)$

c) $y = C_1 e^{3x} + C_2 e^{-3x} - \frac{1}{4}\cos(5x) + \frac{3}{16}\sin(5x)$

d) $y = C_1 e^{3x} + C_2 e^{-3x} - \frac{1}{4}\cos(5x) - \frac{3}{16}\sin(5x)$

e) $y = C_1 \sin(3x) + C_2 \cos(3x) + \frac{3}{16}\cos(5x) - \frac{5}{16}x\sin(5x)$

f) None of the above.

Question 6

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 9y = -4\cos(3x) + 2\sin(3x)$$

a) $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{2}{3}x\sin(3x) + \frac{1}{3}\cos(3x)$

b) $y = C_1 \sin(3x) + C_2 \cos(3x) - \frac{2}{3}x\sin(3x) - \frac{1}{3}x\cos(3x)$

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

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

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

f) None of the above.

Question 7

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 2y' - 8y = 3e^{4x} + 4$$

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

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

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

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

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

f) None of the above.

Question 8

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 6y' + 9y = 5x e^{3x}$$

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

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

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

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

e) $y = C_1 e^{3x} + C_2 x e^{3x} + \frac{25}{6} e^{3x} x^3$

f) None of the above.

Question 9

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{-5x} + C_2 x e^{-5x} + \frac{6}{5} e^{-5x} x \sin(5x) + \frac{3}{25} e^{-5x}\cos(5x)$

b) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{3}{5} x \sin(5x) - \frac{3}{25}\cos(5x) + \frac{3}{5}\sin(5x)$

c) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{3}{5} x \sin(5x) - \frac{3}{25}\cos(5x) - \frac{3}{5}\sin(5x)$

d) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{3}{25} e^{-5x}\cos(5x)$

e) $y = C_1 e^{-5x} + C_2 x e^{-5x} + \frac{3}{25} e^{-5x}\cos(5x)$

f) None of the above.

Question 10

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

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

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

f) None of the above.

Question 12

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + y' - 6y = 3x + 5$$

a) $y = C_1 e^{2x} + C_2 e^{-3x} + \frac{71}{60} + \frac{7}{10} x$

b) $y = C_1 e^{2x} + C_2 e^{-3x} + \frac{11}{12} + \frac{1}{2} x$

c) $y = C_1 e^{2x} + C_2 e^{-3x} - \frac{11}{12} - \frac{1}{2} x$

d) $y = C_1 e^{2x} + C_2 e^{-3x} - \frac{71}{60} - \frac{7}{10} x$

e) $y = C_1 e^{2x} + C_2 e^{-3x} + \frac{23}{60} + \frac{1}{10} x$

f) None of the above.

Question 13

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{x} + C_2 e^{-3x} + \frac{97}{54} + \frac{29}{18} x + \frac{5}{6} x^2 + \frac{1}{6} x^3$

b) $y = C_1 e^{x} + C_2 e^{-3x} + \frac{179}{108} + \frac{73}{36} x + \frac{7}{12} x^2 + \frac{5}{12} x^3$

c) $y = C_1 e^{x} + C_2 e^{-3x} - \frac{179}{108} - \frac{73}{36} x - \frac{7}{12} x^2 - \frac{5}{12} x^3$

d) $y = C_1 e^{x} + C_2 e^{-3x} - \frac{97}{54} - \frac{29}{18} x - \frac{5}{6} x^2 - \frac{1}{6} x^3$

e) $y = C_1 e^{x} + C_2 e^{-3x} + \frac{46}{27} + \frac{17}{9} x + \frac{2}{3} x^2 + \frac{1}{3} x^3$

f) None of the above.

Question 14

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{4x} \cos(2x) + C_2 e^{4x} \sin(2x) - \frac{1}{40} e^{-2x} \cos(4x) - \frac{1}{80} e^{-2x} \sin(4x)$

b) $y = C_1 e^{2x} \cos(4x) + C_2 e^{2x} \sin(4x) - \frac{1}{40} e^{-2x} \cos(4x) - \frac{1}{80} e^{-2x} \sin(4x)$

c) $y = C_1 e^{4x} \cos(2x) + C_2 e^{4x} \sin(2x) + \frac{1}{40} e^{-2x} \cos(4x) + \frac{1}{80} e^{-2x} \sin(4x)$

d) $y = \frac{1}{40} e^{-2x} \cos(4x) + \frac{1}{80} e^{-2x} \sin(4x) + \cos(2x)\, C_1 + C_2 \sin(4x)$

e) $y = C_1 e^{2x}\cos(4x) + C_2 e^{2x}\sin(4x) + \frac{1}{40} e^{-2x}\cos(4x) + \frac{1}{80} e^{-2x}\sin(4x)$

f) None of the above.

Question 15

Your answer is CORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{-2x}\cos(x) + C_2 e^{-2x}\sin(x) + \frac{1}{15} e^{x}\cos(2x) + \frac{2}{15}\sin(2x)\, e^{x}$

b) $y = C_1 e^{-2x}\cos(x) + C_2 e^{-2x}\sin(x) - \frac{1}{15} e^{x}\cos(2x) - \frac{2}{15}\sin(2x)\, e^{x}$

c) $y = C_1 e^{x}\cos(2x) + C_2 e^{x}\sin(2x) + \frac{1}{15} e^{x}\cos(2x) + \frac{2}{15}\sin(2x)\, e^{x}$

d) $y = C_1 e^{x}\cos(2x) + C_2 e^{x}\sin(2x) - \frac{1}{15} e^{x}\cos(2x) - \frac{2}{15}\sin(2x)\, e^{x}$

e) $y = \frac{1}{15} e^{x}\cos(2x) + \frac{2}{15}\sin(2x)\, e^{x} + \cos(2x)\, C_1 + C_2\sin(x)$

f) None of the above.

Question 16

Your answer is INCORRECT.

Find the solution of the given initial-value problem.

$$y'' + y' - 2y = x$$
$$[y(0) = 0,\quad y'(0) = 3]$$

a) $y = \frac{4}{3} e^{-2x} + \frac{13}{12} e^{x} - \frac{1}{4} - \frac{1}{2} x$

b) $y = -\frac{13}{12} e^{-2x} + \frac{4}{3} e^{x} + \frac{1}{4} + \frac{1}{2} x$

c) $y = -\frac{13}{12} e^{-2x} + \frac{4}{3} e^{x} - \frac{1}{4} - \frac{1}{2} x$

d) $y = \frac{4}{3} e^{-2x} - \frac{13}{12} e^{x}$

e) $y = -\frac{13}{12}e^{-2x} - \frac{4}{3}e^{x}$

f) None of the above.

Question 17

Your answer is INCORRECT.

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.

$$y'' - 5y' + 6y = \sin(3x)$$
$$[y(0) = 1,\ y'(0) = -2]$$

a) $y = \frac{62}{13}e^{2x} - \frac{23}{6}e^{3x} - \frac{5}{78}\cos(3x) + \frac{1}{78}\sin(3x)$

b) $y = \frac{62}{13}e^{2x} - \frac{23}{6}e^{3x} + \frac{5}{78}\cos(3x) - \frac{1}{78}\sin(3x)$

c) $y = -\frac{62}{13}e^{3x} - \frac{23}{6}e^{2x} + \frac{5}{78}\cos(3x) - \frac{1}{78}\sin(3x)$

d) $y = -\frac{23}{6}e^{2x} + \frac{62}{13}e^{3x}$

e) $y = \frac{62}{13} e^{2x} + \frac{23}{6} e^{3x}$

f) None of the above.

Question 19

Your answer is INCORRECT.

Give the form of a particular solution of the differential equation

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

a) $z = A\cos(3x) + Be^{-5x} + C$

b) $z = A\cos(3x) + Bxe^{-5x} + C$

c) $z = A\cos(3x) + B\sin(3x) + Ce^{-5x} + E$

d) $z = A\cos(3x) + B\sin(3x) + Ce^{-5x} + Ex$

e) $z = A\cos(3x) + B\sin(3x) + Cxe^{-5x} + E$

f) None of the above.

Question 20

Your answer is INCORRECT.

Give the form of a particular solution of the differential equation

$$y'' - 10y' + 25y = e^{4x}\sin(2x) - 2e^{5x} - 2x$$

a) $z = Ae^{4x}\cos(2x) + Be^{4x}\sin(2x) + Cx^2e^{5x} + Ex + F$

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

c) $z = Ae^{4x}\sin(2x) + Ce^{5x} + Ex + F$

d) $z = Ae^{4x}\sin(2x) + Ce^{5x} + Ex$

e) $z = Ae^{4x}\cos(2x) + Be^{4x}\sin(2x) + Cxe^{5x} + Ex + F$

f) None of the above.