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) $y=C_1e^x+C_2e^{-2x}+\frac{9}{4}+\frac{9}{2}x+\frac{1}{2}x^2+\frac{2}{3}x^3$

b) $y=C_1e^x+C_2e^{-2x}+\frac{21}{8}+\frac{15}{4}x+\frac{3}{4}x^2+\frac{1}{2}x^3$

c) $y=C_1e^x+C_2e^{-2x}-\frac{21}{8}-\frac{15}{4}x-\frac{3}{4}x^2-\frac{1}{2}x^3$

d) $y=C_1e^x+C_2e^{-2x}-\frac{9}{4}-\frac{9}{2}x-\frac{1}{2}x^2-\frac{2}{3}x^3$

e) $y=C_1e^x+C_2e^{-2x}+\frac{27}{8}+\frac{9}{4}x+\frac{5}{4}x^2+\frac{1}{6}x^3$

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) $y=\frac{3}{40}\cos(3x)\,e^{-x}+\frac{1}{40}e^{-x}\sin(3x)+C_1e^x\cos(3x)+C_2e^x\sin(3x)$

b) $y=-\frac{3}{40}\cos(3x)\,e^{-x}-\frac{1}{40}e^{-x}\sin(3x)+C_1e^x\cos(3x)+C_2e^x\sin(3x)$

c) $y=\frac{3}{40}\cos(3x)\,e^{-x}+\frac{1}{40}e^{-x}\sin(3x)+C_1e^{3x}\cos(x)+C_2e^{3x}\sin(x)$

d) $y=-\frac{3}{40}\cos(3x)\,e^{-x}-\frac{1}{40}e^{-x}\sin(3x)+C_1e^{3x}\cos(x)+C_2e^{3x}\sin(x)$

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.

$$y'' - 2y' - 8y = 4x$$
$$[y(0) = 0,\quad y'(0) = 3]$$

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

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

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

a) $z = Ae^{-2x}\sin(4x) + Ce^{-3x} + Ex$

b) $z = Ae^{-2x}\sin(4x) + Cx^2e^{-3x} + Ex$

c) $z = Ae^{-2x}\sin(4x) + Ce^{-3x} + Ex + F$

d) $z = Ae^{-2x}\cos(4x) + Be^{-2x}\sin(4x) + Cxe^{-3x} + Ex + F$

e) $z = Ae^{-2x}\cos(4x) + Be^{-2x}\sin(4x) + Cx^2e^{-3x} + Ex + F$

f) None of the above.