PRINTABLE VERSION

Quiz 5

You scored 30 out of 100

Question 1

Your answer is INCORRECT.

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

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

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 CORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

f) None of the above.

Question 4

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 10y' + 25y = -3e^{5x} + \frac{e^{5x}}{x^2}$$

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

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

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

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

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

f) None of the above.

Question 5

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 25y = -4\cos(2x) - 3\sin(2x)$$

a) $y = C_1 \sin(5x) + C_2 \cos(5x) - \frac{1}{7}\cos(2x) + \frac{2}{21} x \sin(2x)$

b) $y = C_1 e^{5x} + C_2 e^{-5x} - \frac{4}{21}\cos(2x) - \frac{1}{7}\sin(2x)$

c) $y = C_1 e^{5x} + C_2 e^{-5x} - \frac{4}{21}\cos(2x) + \frac{1}{7}\sin(2x)$

d) $y = C_1 \sin(5x) + C_2 \cos(5x) - \frac{4}{21}\cos(2x) - \frac{1}{7}\sin(2x)$

e) $y = C_1 \sin(5x) + C_2 \cos(5x) - \frac{4}{21}\cos(2x) + \frac{1}{7}\sin(2x)$

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 CORRECT.

Give the general solution of the differential equation

$$y'' + 6y' + 8y = 2e^{-2x} - 4$$

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

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

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

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

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

f) None of the above.

Question 8

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

f) None of the above.

Question 9

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

f) None of the above.

Question 10

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 6y' + 8y = 2e^{4x}$$

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

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

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

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

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

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

$$y'' + 6y' + 5y = 3x + 2$$

a) $y = C_1 e^{-x} + C_2 e^{-5x} - \frac{8}{25} + \frac{3}{5}x$

b) $y = C_1 e^{-x} + C_2 e^{-5x} + \frac{8}{25} - \frac{3}{5}x$

c) $y = C_1 e^{-x} + C_2 e^{-5x} + \frac{39}{100} - \frac{9}{20}x$

d) $y = C_1 e^{-x} + C_2 e^{-5x} - \frac{39}{100} + \frac{9}{20}x$

e) $y = C_1 e^{-x} + C_2 e^{-5x} + \frac{9}{50} - \frac{9}{10} x$

f) None of the above.

Question 13

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{x} + C_2 e^{-3x} + \frac{52}{27} + \frac{20}{9} x + \frac{2}{3} x^2 + \frac{1}{3} x^3$

b) $y = C_1 e^{x} + C_2 e^{-3x} - \frac{52}{27} - \frac{20}{9} x - \frac{2}{3} x^2 - \frac{1}{3} x^3$

c) $y = C_1 e^{x} + C_2 e^{-3x} + \frac{50}{27} + \frac{22}{9} x + \frac{7}{12} x^2 + \frac{5}{12} x^3$

d) $y = C_1 e^{x} + C_2 e^{-3x} - \frac{50}{27} - \frac{22}{9} x - \frac{7}{12} x^2 - \frac{5}{12} x^3$

e) $y = C_1 e^{x} + C_2 e^{-3x} + \frac{56}{27} + \frac{16}{9} x + \frac{5}{6} x^2 + \frac{1}{6} x^3$

f) None of the above.

Question 14

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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 CORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{-2x}\cos(3x) + C_2 e^{-2x}\sin(3x) - \frac{3}{65} e^{3x}\cos(2x) - \frac{2}{65}\sin(2x) e^{3x}$

b) $y = C_1 e^{-2x}\cos(3x) + C_2 e^{-2x}\sin(3x) + \frac{3}{65} e^{3x}\cos(2x) + \frac{2}{65}\sin(2x) e^{3x}$

c) $y = C_1 e^{3x}\cos(2x) + C_2 e^{3x}\sin(2x) + \frac{3}{65} e^{3x}\cos(2x) + \frac{2}{65}\sin(2x) e^{3x}$

d) $y = C_1 e^{3x}\cos(2x) + C_2 e^{3x}\sin(2x) - \frac{3}{65} e^{3x}\cos(2x) - \frac{2}{65}\sin(2x) e^{3x}$

e) $y = \frac{3}{65} e^{3x}\cos(2x) + \frac{2}{65}\sin(2x) e^{3x} + \cos(2x) C_1 + C_2 \sin(3x)$

f) None of the above.

Question 16

Your answer is CORRECT.

Find the solution of the given initial-value problem.

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

a) $y = \frac{1}{20} e^{-2x} + \frac{13}{15} e^{3x} + \frac{1}{12} - \frac{1}{2} x$

b) $y = \frac{1}{20} e^{-2x} + \frac{13}{15} e^{3x} - \frac{1}{12} + \frac{1}{2} x$

c) $y = \frac{13}{15} e^{-2x} - \frac{1}{20} e^{3x} + \frac{1}{12} - \frac{1}{2} x$

d) $y = \frac{13}{15} e^{-2x} + \frac{1}{20} e^{3x}$

e) $y = \frac{1}{20} e^{-2x} - \frac{13}{15} e^{3x}$

f) None of the above.

Question 17

Your answer is CORRECT.

Find the solution of the given initial-value problem.

$$y'' + 4y = x^2 + 6e^x$$
$$[y(0) = 0,\ y'(0) = 5]$$

a) $y = -\frac{43}{40}\cos(2x) + \frac{19}{10}\sin(2x) + \frac{1}{4}x^2 - \frac{1}{8} + \frac{6}{5}e^x$

b) $y = -\frac{43}{40}\cos(2x) + \frac{19}{10}\sin(2x) - \frac{1}{4}x^2 + \frac{1}{8} - \frac{6}{5}e^x$

c) $y = \frac{19}{10}\cos(2x) + \frac{43}{40}\sin(2x) + \frac{1}{4}x^2 - \frac{1}{8} + \frac{6}{5}e^x$

d) $y = \frac{19}{10}\cos(2x) - \frac{43}{40}\sin(2x)$

e) $y = -\frac{43}{40}\cos(2x) - \frac{19}{10}\sin(2x)$

f) None of the above.

Question 18

Your answer is INCORRECT.

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

$$y''-2y'-15y=-3\cos(2x)-2e^{5x}+3$$

a) $z=A\cos(2x)+B\sin(2x)+Ce^{5x}+Ex$

b) $z=A\cos(2x)+B\sin(2x)+Ce^{5x}+E$

c) $z=A\cos(2x)+Be^{5x}+C$

d) $z=A\cos(2x)+B\sin(2x)+Cxe^{5x}+E$

e) $z=A\cos(2x)+Bxe^{5x}+C$

f) None of the above.

Question 20

Your answer is CORRECT.

Give the form of a particular solution of the differential equation

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

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

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

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

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

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

f) None of the above.