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

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

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 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.

$$y'' - 2y' - 8y = 4x$$
$$[y(0) = 1, \quad y'(0) = 3]$$

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

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

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

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

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

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

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.