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) $y=C_1e^{3x}\cos(2x)+C_2e^{3x}\sin(2x)+\frac{3}{130}e^{3x}\cos(2x)+\frac{1}{65}\sin(2x)\,e^{3x}$

b) $y=C_1e^{-2x}\cos(3x)+C_2e^{-2x}\sin(3x)-\frac{3}{130}e^{3x}\cos(2x)-\frac{1}{65}\sin(2x)\,e^{3x}$

c) $y=C_1e^{-2x}\cos(3x)+C_2e^{-2x}\sin(3x)+\frac{3}{130}e^{3x}\cos(2x)+\frac{1}{65}\sin(2x)\,e^{3x}$

d) $y=C_1e^{3x}\cos(2x)+C_2e^{3x}\sin(2x)-\frac{3}{130}e^{3x}\cos(2x)-\frac{1}{65}\sin(2x)\,e^{3x}$

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.

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

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)

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

f) None of the above.