PRINTABLE VERSION

Quiz 5

You scored 15 out of 100

Question 1

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 25y = -3\tan(5x)$$

a) $y = C_1 \sin(5x) + C_2 \cos(5x) + \frac{3}{25}\cos(5x)\ln(\sec(5x) + \tan(5x))$

b) $y = C_1 \sin(5x) + C_2 \cos(5x) + \frac{3}{25}\sin(5x)\ln(\sec(5x) + \tan(5x))$

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

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

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

f) None of the above.

Question 2

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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 CORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

f) None of the above.

Question 4

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 6y' + 9y = -5e^{3x} + \frac{e^{3x}}{x^2}$$

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

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

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

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

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

f) None of the above.

Question 5

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 4y = -2\cos(5x) - 2\sin(5x)$$

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

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

c) $y = C_1 \sin(2x) + C_2 \cos(2x) + \frac{2}{21}\cos(5x) + \frac{2}{21}\sin(5x)$

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

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

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

$$y'' + 7y' + 12y = 2e^{-3x} + 4$$

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

b) $y = C_1 e^{3x} + C_2 e^{-4x} + 2xe^{-3x} - \frac{1}{3}$

c) $y = C_1 e^{-3x} + C_2 e^{4x} + 2xe^{-3x} - \frac{1}{3}$

d) $y = C_1 e^{-3x} + C_2 e^{-4x} - 2xe^{-3x} + 3$

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

f) None of the above.

Question 8

Your answer is INCORRECT.

Give the general solution of the differential equation

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

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

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

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

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

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

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

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

f) None of the above.

Question 10

Your answer is CORRECT.

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

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

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

$$y'' - 3y' - 10y = 3x + 2$$

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 INCORRECT.

Give the general solution of the differential equation

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

a) $y=C_1 e^{2x}\cos(3x)+C_2 e^{2x}\sin(3x)-\frac{3}{52}\cos(3x)e^{-2x}-\frac{1}{26}e^{-2x}\sin(3x)$

b) $y=C_1 e^{2x}\cos(3x)+C_2 e^{2x}\sin(3x)+\frac{3}{52}\cos(3x)e^{-2x}+\frac{1}{26}e^{-2x}\sin(3x)$

c) $y=C_1 e^{3x}\cos(2x)+C_2 e^{3x}\sin(2x)+\frac{3}{52}\cos(3x)e^{-2x}+\frac{1}{26}e^{-2x}\sin(3x)$

d) $y=C_1 e^{3x}\cos(2x)+C_2 e^{3x}\sin(2x)-\frac{3}{52}\cos(3x)e^{-2x}-\frac{1}{26}e^{-2x}\sin(3x)$

e) $y=\frac{3}{52}\cos(3x)e^{-2x}+\frac{1}{26}e^{-2x}\sin(3x)+\cos(2x)C_1+C_2\sin(3x)$

f) None of the above.

Question 15

Your answer is INCORRECT.

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.

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

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 INCORRECT.

Find the solution of the given initial-value problem.

$$y'' + 9y = x^2 + 5e^x$$
$$[y(0) = 1,\ y'(0) = 4]$$

a) $y = \frac{7}{6}\cos(3x) + \frac{85}{162}\sin(3x)$

b) $y = \frac{85}{162}\cos(3x) + \frac{7}{6}\sin(3x) - \frac{1}{9}x^2 + \frac{2}{81} - \frac{1}{2}e^x$

c) $y = \frac{7}{6}\cos(3x) - \frac{85}{162}\sin(3x) + \frac{1}{9}x^2 - \frac{2}{81} + \frac{1}{2}e^x$

d) $y = \frac{85}{162}\cos(3x) - \frac{7}{6}\sin(3x)$

e) $y = \frac{85}{162}\cos(3x) - \frac{7}{6}\sin(3x) + \frac{1}{9}x^2 - \frac{2}{81} + \frac{1}{2}e^x$

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)

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

a)

b)

c)

d)

e)

f) None of the above.

Question 20

Your answer is CORRECT.

Give the form of a particular solution of the differential equation

a)

b)

c)

d)

e)

f) None of the above.