PRINTABLE VERSION

Quiz 5

You scored 30 out of 100

Question 1

Your answer is CORRECT.

Give the general solution of the differential equation

$$y'' + 16y = 3\tan(4x)$$

a) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{3}{16}\sin(4x)\ln(\sec(4x) + \tan(4x))$

b) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{3}{16}\cos(4x)\ln(\sec(4x) + \tan(4x))$

c) $y = C_1 \sin(4x) + C_2 \cos(4x) - \frac{3}{16}\sin(4x)\ln(\sec(4x) - \tan(4x))$

d) $y = C_1 e^{4x} + C_2 e^{-4x} - \frac{3}{16}\cos(4x)\ln(\sec(4x) + \tan(4x))$

e) $y = C_1 e^{4x} + C_2 e^{-4x} - \frac{3}{16}\sin(4x)\ln(\sec(4x) + \tan(4x))$

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

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

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

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

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 CORRECT.

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 CORRECT.

Give the general solution of the differential equation

$$y'' + 2y' - 15y = -4e^{3x} - 3$$

a) $y = C_1 e^{3x} + C_2 e^{5x} - \frac{1}{2} x e^{3x} - \frac{1}{5}$

b) $y = C_1 e^{-3x} + C_2 e^{-5x} - \frac{1}{2} x e^{3x} - \frac{1}{5}$

c) $y = C_1 e^{3x} + C_2 e^{-5x} - \frac{1}{2} x e^{3x} + \frac{1}{5}$

d) $y = C_1 e^{-3x} + C_2 e^{5x} - \frac{1}{2} e^{3x} + \frac{1}{5}$

e) $y = C_1 e^{3x} + C_2 e^{-5x} + \frac{1}{2} x e^{3x} + 5$

f) None of the above.

Question 8

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' - 8y' + 16y = 5x e^{4x}$$

a) $y = C_1 e^{4x} + C_2 x e^{4x} - \frac{5}{3} x^3 + \frac{5}{2} x^2$

b) $y = C_1 e^{4x} + C_2 x e^{4x} - \frac{5}{6} e^{4x} x^3$

c) $y = C_1 e^{4x} + C_2 x e^{4x} + \frac{5}{6} e^{4x} x^3$

d) $y = C_1 e^{4x} + C_2 x e^{4x} - \frac{5}{3} x^3 - \frac{5}{2} x^2$

e) $y = C_1 e^{4x} + C_2 x e^{4x} + \frac{25}{6} e^{4x} x^3$

f) None of the above.

Question 9

Your answer is INCORRECT.

Give the general solution of the differential equation

$$y'' + 10y' + 25y = 4 e^{-5x} \cos(5x)$$

a) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{4}{5} x \sin(5x) - \frac{4}{25} \cos(5x) - \frac{4}{5} \sin(5x)$

b) $y = C_1 e^{-5x} + C_2 x e^{-5x} + \frac{4}{25} e^{-5x} \cos(5x)$

c) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{4}{5} x \sin(5x) - \frac{4}{25} \cos(5x) + \frac{4}{5} \sin(5x)$

d) $y = C_1 e^{-5x} + C_2 x e^{-5x} + \frac{8}{5} e^{-5x} x \sin(5x) + \frac{4}{25} e^{-5x} \cos(5x)$

e) $y = C_1 e^{-5x} + C_2 x e^{-5x} - \frac{4}{25} e^{-5x} \cos(5x)$

f) None of the above.

Question 10

Your answer is CORRECT.

Give the general solution of the differential equation

$$y'' - 2y' - 15y = 3 e^{-3x}$$

a) $y = C_1 e^{-3x} + C_2 e^{5x} + \frac{3}{8} e^{-3x} x + \frac{3}{64} e^{-3x}$

b) $y = C_1 e^{-3x} + C_2 e^{5x} - \frac{3}{8} e^{-3x} x - \frac{3}{64} e^{-3x}$

c) $y = C_1 e^{-3x} + C_2 e^{5x} - \frac{3}{8} x - \frac{3}{64} e^{-8x}$

d) $y = C_1 e^{-3x} + C_2 e^{5x} - \frac{3}{8} x + \frac{3}{64} e^{-8x}$

e) $y = C_1 e^{-3x} + C_2 e^{5x} + \frac{3}{8} e^{-3x} x - \frac{3}{64} e^{-3x}$

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

$$y'' - y' - 6y = 2x + 4$$

a) $y = C_1 e^{3x} + C_2 e^{-2x} + \frac{1}{90} - \frac{1}{15} x$

b) $y = C_1 e^{3x} + C_2 e^{-2x} + \frac{41}{45} + \frac{8}{15} x$

c) $y = C_1 e^{3x} + C_2 e^{-2x} - \frac{41}{45} - \frac{8}{15} x$

d) $y = C_1 e^{3x} + C_2 e^{-2x} - \frac{11}{18} - \frac{1}{3} x$

e) $y = C_1 e^{3x} + C_2 e^{-2x} + \frac{11}{18} + \frac{1}{3}x$

f) None of the above.

Question 13

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{x} + C_2 e^{-2x} + \frac{9}{4} + \frac{9}{2}x + \frac{1}{2}x^2 + \frac{2}{3}x^3$

b) $y = C_1 e^{x} + C_2 e^{-2x} + \frac{21}{8} + \frac{15}{4}x + \frac{3}{4}x^2 + \frac{1}{2}x^3$

c) $y = C_1 e^{x} + C_2 e^{-2x} - \frac{21}{8} - \frac{15}{4}x - \frac{3}{4}x^2 - \frac{1}{2}x^3$

d) $y = C_1 e^{x} + C_2 e^{-2x} - \frac{9}{4} - \frac{9}{2}x - \frac{1}{2}x^2 - \frac{2}{3}x^3$

e) $y = C_1 e^{x} + C_2 e^{-2x} + \frac{27}{8} + \frac{9}{4}x + \frac{5}{4}x^2 + \frac{1}{6}x^3$

f) None of the above.

Question 14

Your answer is CORRECT.

Give the general solution of the differential equation

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

a) $y = C_1 e^{3x}\cos(2x) + C_2 e^{3x}\sin(2x) + \frac{3}{104}\cos(3x)\,e^{-2x} + \frac{1}{52}e^{-2x}\sin(3x)$

b) $y = C_1 e^{2x}\cos(3x) + C_2 e^{2x}\sin(3x) - \frac{3}{104}\cos(3x)\,e^{-2x} - \frac{1}{52}e^{-2x}\sin(3x)$

c) $y = C_1 e^{2x}\cos(3x) + C_2 e^{2x}\sin(3x) + \frac{3}{104}\cos(3x)\,e^{-2x} + \frac{1}{52}e^{-2x}\sin(3x)$

d) $y = C_1 e^{3x}\cos(2x) + C_2 e^{3x}\sin(2x) - \frac{3}{104}\cos(3x)\,e^{-2x} - \frac{1}{52}e^{-2x}\sin(3x)$

e) $y=\frac{3}{104}\cos(3x)\,e^{-2x}+\frac{1}{52}e^{-2x}\sin(3x)+\cos(2x)\,C_1+C_2\sin(3x)$

f) None of the above.

Question 15

Your answer is INCORRECT.

Give the general solution of the differential equation

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

a) $y=C_1e^{4x}\cos(2x)+C_2e^{4x}\sin(2x)-\frac{1}{120}e^{4x}\sin(2x)-\frac{1}{60}e^{4x}\cos(2x)$

b) $y=C_1e^{-2x}\cos(4x)+C_2e^{-2x}\sin(4x)-\frac{1}{120}e^{4x}\sin(2x)-\frac{1}{60}e^{4x}\cos(2x)$

c) $y=C_1e^{4x}\cos(2x)+C_2e^{4x}\sin(2x)+\frac{1}{120}e^{4x}\sin(2x)+\frac{1}{60}e^{4x}\cos(2x)$

d) $y=\frac{1}{120}e^{4x}\sin(2x)+\frac{1}{60}e^{4x}\cos(2x)+\cos(2x)\,C_1+C_2\sin(4x)$

e) $y=C_1e^{-2x}\cos(4x)+C_2e^{-2x}\sin(4x)+\frac{1}{120}e^{4x}\sin(2x)+\frac{1}{60}e^{4x}\cos(2x)$

f) None of the above.

Question 16

Your answer is CORRECT.

Find the solution of the given initial-value problem.

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

a) $y=\frac{4}{3}e^{-2x}+\frac{13}{12}e^{x}-\frac{1}{4}-\frac{1}{2}x$

b) $y=-\frac{13}{12}e^{-2x}+\frac{4}{3}e^{x}+\frac{1}{4}+\frac{1}{2}x$

c) $y=-\frac{13}{12}e^{-2x}+\frac{4}{3}e^{x}-\frac{1}{4}-\frac{1}{2}x$

d) $y=\frac{4}{3}e^{-2x}-\frac{13}{12}e^{x}$

e) $y = -\frac{13}{12}e^{-2x} - \frac{4}{3}e^{x}$

f) None of the above.

Question 17

Your answer is INCORRECT.

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 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

$$y''+3y'-10y=-4\cos(3x)+3e^{-5x}+4$$

a) $z=A\cos(3x)+Be^{-5x}+C$

b) $z=A\cos(3x)+Bxe^{-5x}+C$

c) $z=A\cos(3x)+B\sin(3x)+Ce^{-5x}+E$

d) $z=A\cos(3x)+B\sin(3x)+Ce^{-5x}+Ex$

e) $z=A\cos(3x)+B\sin(3x)+Cxe^{-5x}+E$

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

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

f) None of the above.