1.(1 pt) set6/p1.pg

Which of the following statements is always true for the general econd linear differential equation

$$y'' + p_1(x)y' + p_2(x)y = q(x),$$

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where the functions $p_1(x)$, $p_2(x)$, q(x) are continous for all x?

- A. The zero function is a solution.
- B. The solutions are defined for all x.
- C. The difference of two solutions is a solution.
- D. The sum of two solutions is a solution.

2.(1 pt) set6/p2.pg

Let f, g, h be solutions of the third order DE y''' + p(x)y'' + q(x)y' + r(x)y = 0with p(x), q(x), r(x) continuous for all x. Suppose that f(0) = 32, f'(0) = 1, g(0) = 63, g'(0) = 2, h(0) = 6, h'(0) = 1.Which of the following statements is always correct?

- A. h = -53f + 27g.
- B. None of the other answers
- C. h = -49f + 25g.
- D. h = -51f + 26g.

3.(1 pt) set6/p3.pg

Which of the following is a possible form for a particular solution of the differential equation $(D-1)^2(D+2)^2(y) = xe^x + e^{2x}$?

A. $Ax^{2}e^{x} + Bx^{3}e^{x} + Ce^{2x}$. B. $Ax^{2}e^{x} + Be^{2x}$. C. $Ax^{2}e^{x} + Be^{2x}$. D. $Ax^{2}e^{x} + Bx^{3}e^{x} + Cxe^{2x}$.

4.(1 pt) set6/p4.pg

For which values of *c* are the solutions of the differential equation $y^{i\nu} + 14y''' + 50y'' + 14y' + 49y = \sin(ct)$ bounded as $t \to +\infty$? A. $c \neq 0$.

- B. $c \neq 0$.
- C. $c \neq 1$.
- D. $c \neq 49$.

5.(1 pt) set6/p5.pg

For which values of *c* are the solutions of the system $\frac{dx}{dt} = -6x + cy, \quad \frac{dy}{dt} = (c+1)x + (c+1)y$ bounded as $t \to +\infty$? A. $-6 \le c \le -1$. B. $-6 < c \le -1$. C. $-6 \le c < -1$. D. $-6 < c \le -1$.