

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Let $f_1(t) = t+4$, $f_2(t) = t^2+6$ and $f_3(t) = 2t^2-3t$. Is the set $\{f_1, f_2, f_3\}$ linearly independent? If not, provide a linear dependence relation.

2. Consider the initial value problem involving a 3rd order homogeneous linear differential equation with constant coefficients:

$$4y''' + y' + 5y = 0, \quad y(0) = 2, \quad y'(0) = 1, \quad y''(0) = -1.$$

Find a particular solution for this initial value problem.