Mat 274 **Elementary Differential Equations**

Sec3.1–3.3 of Edwards and Penney

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1. (1 pt) Use the method of undetermined coefficients to find one solution of

$$y'' + 3y' - 2y = 2e^{2t}.$$

$y =$ _____

(It doesn't matter which specific solution you find for this problem.)

Correct Answers:

- `( 1/4 ) * exp((2)*t) + c*e^(0.56155281280883*t) +d*e^(-3.56155281280883*t)`

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2. (1 pt) Find a particular solution to the differential equation

$$-3y'' + 2y' + 1y = -2t^2 - 1t + 5e^{-4t}.$$

$y_p =$ _____

Correct Answers:

- `-2*(t**2) + 7 *(t) + -26 + -0.0909090909090909 exp(-4*t) + a*exp(1*t) + b*(exp(-0.333333333333333*t) + 0*t*exp(-0.333`

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3. (1 pt) Find a particular solution to

$$y'' + 4y' + 4y = -14e^{-2t}.$$

$y_p =$ _____

Correct Answers:

- `(-14/2)*(t**2)*exp(-2*t) + a*e^(-2*t) + b*t*e**(-2*t)`

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4. (1 pt) Find a particular solution to the differential equation

$$y'' - 4y' + 3y = 9t^3.$$

$y_p =$ _____

Correct Answers:

- `3*(t**3) + 12 *(t**2) + 26*t + 26.6666666666667 + a*e^(1*t) + b*(e^(3*t) + 0*t*e**(1*t))`

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5. (1 pt) Find a particular solution to

$$y'' + 5y' + 6y = 20te^{2t}.$$

$y_p =$ _____

Correct Answers:

- `(1 * t + -0.45) * ((2.71828182845905)**(2*t))  + a*e^(-2*t) + b*e**(-3*t)`

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6. (1 pt) Find the solution of

$$y'' + 12y' + 35y = 24\,e^{-4t}$$

with $y(0) = 9$ and $y'(0) = 4$.

$y =$

Correct Answers:

- `  ( 8 ) * exp((-4)*t)  + (1/2 - 21) *exp((-6 - 1)*t) + (1/2 + 21) *exp((-6 + 1)*t)`

7. (1 pt) Find the solution of

$$y'' + 2y' + y = 225\,e^{4t}$$

with $y(0) = 5$ and $y'(0) = 6$.

$y =$ _____

Correct Answers:

- `( 9 ) * exp((4)*t)  + (-4) *exp(-t) + (-34)*t *exp(-t)`

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8. (1 pt) Find the solution of

$$y'' + 7y' = 882\sin(7t) + 784\cos(7t)$$

with $y(0) = 6$ and $y'(0) = 4$.

$y =$ _____

Correct Answers:

- `(-17 )*1*cos(7 *t) + (-1 )*1*sin(7 *t) + (23/2 - 183/14) *exp((-7/2 - 7/2)*t) + (23/2 + 183/14) *exp((-7/2 + 7/2)*t)`

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9. (1 pt) Find a particular solution to

$$y'' + 9y = 30\sin(3t).$$

$y_p =$ _____

Correct Answers:

- `-5 * t * cos(3*t)  + a*sin(3*t) + b*cos(3*t)`