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1. (1 point) To find u_1 and u_2 we would need to integrate which of the following? Mark all that apply.

- A. $-\dfrac{f(x)W}{y_2}$
- B. $\dfrac{y_2 f(x)}{W}$
- C. $\dfrac{f(x)W}{y_1}$
- D. $-\dfrac{y_2 W}{f(x)}$
- E. $\dfrac{y_1 f(x)}{W}$
- F. $-\dfrac{y_1 f(x)}{W}$
- G. $-\dfrac{y_2 f(x)}{W}$
- H. $\dfrac{y_1 W}{f(x)}$
- I. None of the above

Solution:
SOLUTION:
The correct answer is EG.
Correct Answers:

- `EG`

Consider the differential equation $x^4 y'' - 16x^4 y = 3x^7$. Note that the general solution to the underlying homogeneous differential equation is $y_h = c_1 e^{4x} + c_2 e^{-4x}$. With the notation given in the video, what are the y_1, y_2, and $f(x)$ that we would use to find u_1' and u_2'?

- A. $y_1 = e^{4x},\ y_2 = e^{-4x},\ f(x) = x^{16}$
- B. $y_1 = e^{4x},\ y_2 = e^{-4x},\ f(x) = 3x^7$
- C. $y_1 = e^{4x},\ y_2 = e^{-4x},\ f(x) = 3x^3$
- D. $y_1 = x^4,\ y_2 = x^{-4},\ f(x) = 3x^3$

Solution:
SOLUTION:
The correct answer is C.
Correct Answers:

- `C`

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3. (1 point) Suppose we have a differential equation $y'' + P(x)y' + Q(x)y = x^6$, and we know $y_1 = x^2$ and $y_2 = x^5$ form a fundamental set of solutions for the homogeneous differential equation $y'' + P(x)y' + Q(x)y = 0$.

Then
$W(y_1, y_2)$ = ____________.
u_1 = ____________.
u_2 = ____________.
Correct Answers:

- `3*x^6`
- `-1/18*x^6`
- `1/9*x^3`