Practice Sheet # 6

Successive Differentiation

a. Find the *n* th derivative of the following functions:

1. $y = x^n$
2. $y = (ax + b)^n$
3. $y = \ln(ax + b)$
4. $y = \dfrac{1}{x + a}$
5. $y = e^{ax}$
6. $y = \sin(ax + b)$
7. $y = \cos(ax + b)$

b. If $y = e^{ax} \sin bx,$ then show that $y_2 - 2ay_1 + (a^2 + b^2)y = 0.$

c. If $y = e^x \sin x,$ then show that $y_4 + 4y = 0.$