

Hints for homework#3

1. Use quotient rule and then some trig. identities to simplify.
2. a-d) Chain rule. e) Leibniz and then chain. f) Chain. g) Chain. Sums and constant multiplier rules should be used in a) and c-g).
3. Think of *sin* and *cos*.
4. The equation is linear, i.e. the sums and constant multiples of solutions are solutions (see Feynman Lecture #21 "Harmonic Oscillator").
5. a-e) Change of variable. f) Integrate by parts 3 times ($de^x/dx = e^x$). g) e^x is a nice new variable. h) Integrate by parts 2 times, $\cos = \sin'$ etc. Differentiate to check your answers to problems 3-5, don't wait till I post the answers. To check differentiation in problems 1-2 see if $f'(x) - (f(x) - f(a))/(x - a)$ gets smaller as $x - a$ gets smaller, use your calculator if you wish.