MORE DIFFERENTIATION REVISION

1. Find the derivatives of the following functions:
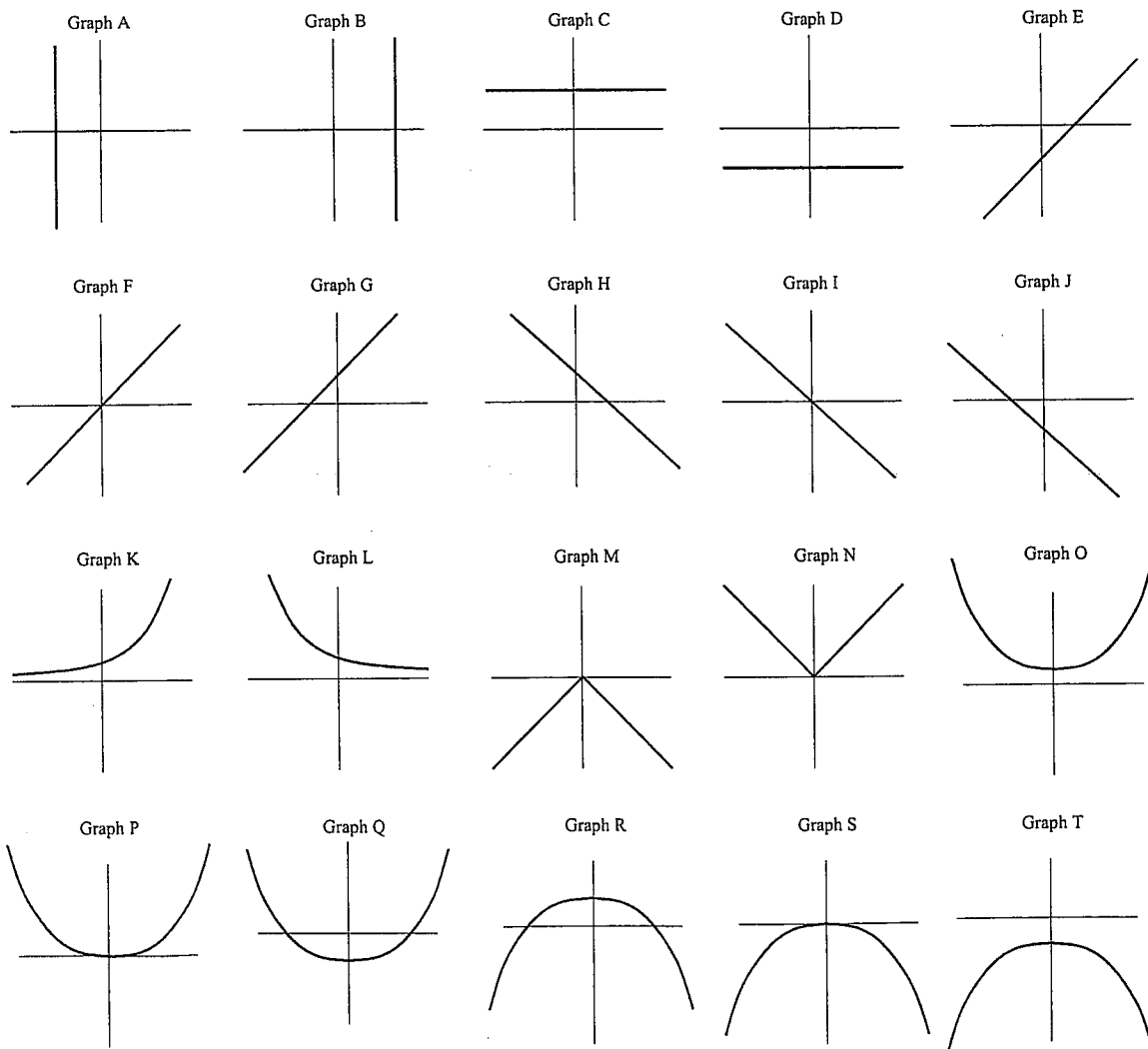
a) $y = 6x^3$
b) $y = 2/x$
c) $y = e^x x^2$
d) $y = (2x+1)(x^2-6)$
e) $y = x^2/(3x-2)$
f) $y = 5$
g) $y = 2 \ln x$
h) $y = 3/x - 5/x^2$
i) $y = (2x^3)^5$
j) $y = (e^{2x})^3$

2. Find the *first* and *second* derivatives of the following functions:
a) $y = x^2 + 4x + 6$
b) $y = 2x^3 - 3x^2 + 7x - 4$
c) $y = \ln x$

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1. Answer each of the following questions, showing all working.

(a) There are eight equations given in this question, and you need to match each equation with its corresponding graph. The graphs are shown below.

Graph A   Graph B   Graph C   Graph D   Graph E

Graph F   Graph G   Graph H   Graph I   Graph J

Graph K   Graph L   Graph M   Graph N   Graph O

Graph P   Graph Q   Graph R   Graph S   Graph T

(i)   Equation is: $-y + 3x + 1 = 2$ (ii)   Equation is: $-3y - 2x - 3 = -2$

(iii)   Equation is: $3y - 2 = 1$ (iv)   Equation is: $-y + 2x + 2 = 1$

(v)   Equation is: $y = -3x^2 - 2.$ (vi)   Equation is: $y = e^{-3x}.$

(vii)   Equation is: $y = 3x^2.$ (viii)   Equation is: $y = e^x.$