Differentiate each function by applying chain rule. Write your answer on a separate sheet of paper.

1. $y = (4x - 10)^4$
   A. $16(4x - 10)^2$
   B. $16(4x - 10)^3$
   C. $16(4x + 10)^2$
   D. $16(4x + 10)^3$

2. $f(x) = (3x^2 - 2x + 1)^6$
   A. $(36x - 12)(3x^2 - 2x + 1)^5$
   B. $(36x - 12)(3x^3 - 2x + 1)^5$
   C. $(36x - 12)(3x^2 + 2x - 1)^4$
   D. $(36x - 12)(3x^2 - 2x - 1)^4$

3. $y = x(x^2 + 3)^2$
   A. $5x^4 + 18x^2 + 9$
   B. $5x^4 - 18x^2 + 9$
   C. $5x^4 + 18x^2 - 9$
   D. $5x^2 + 18x^4 + 9$

4. $f(x) = 4\sin(2x - 7)$
   A. $7cos(2x - 8)$
   B. $8cos(2x + 7)$
   C. $7cos(2x + 8)$
   D. $8cos(2x - 7)$

5. $y = \tan(x^2 + 3x)$
   A. $(2x + 3)sec^2(x^3 + 3x)$
   B. $(2x - 3)sec^2(x^2 + 3x)$
   C. $(2x + 3)sec^2(x^2 + 3x)$
   D. $(2x - 3)sec^2(x^2 + 2x)$

Match Column A with Column B, where A is the collection of functions and B is the collection of derivatives. Write the letter of the correct answer on a separate sheet of paper. *(Use calculator whenever necessary).*

Column A	Column B
6. $y = (x^2 - 5x - 2)^2$	A. $\frac{1}{2(x+8)^{1/2}}$
7. $y = \sin(2x - 5)$	B. $12x^2 - 32x + 16$
8. $y = \sqrt{x + 8}$	C. $-10x\sin(5x^2 - 3)$
9. $y = 4x(x - 2)^2$	D. $2\cos(2x - 5)$
10. $y = \cos(5x^2 - 3)$	E. $(4x - 10)(x^2 - 5x - 2)$

Write true if the statement is correct and false if the statement is incorrect. Write your answer on a separate sheet of paper.

11. Given the function $y = \sqrt{3x + 2}$, the derivative of this function is $y' = \frac{3}{(3x+2)^{1/2}}$.

12. If $y = \tan(4x + 1)$, then its derivative is $y' = 4sec^2(4x + 1)$.

13. When $y = (2x - 3)^{1/3}$, the derivative of this function is $y' = \frac{2}{(2x-3)^{2/3}}$.

14. For instance, the given function is $y = 2\sec(3x)$, then its derivative is $y' = 6\sec(3x)\tan(3x)$.

15. The derivative of the function $y = \sqrt{6x + 1}$ is $y' = \frac{3}{(6x+1)^{1/2}}$.