Extra Derivatives ws for those in need! **(The Steve)** **Show your work on your own paper!**

Find the derivative of each.

1. $f(x)=2\sin 3x$
2. $f(x)=x^4(2x-1)^3$
3. $f(x)=\csc 2x$
4. $f(x)=\dfrac{2x-3}{4x-1}$
5. $f(x)=\dfrac{1}{\sqrt{4x^2-3}}$
6. $f(x)=\dfrac{x^2-2}{x^2-3}$
7. $f(x)=2\cos^3(3x)$
8. $f(x)=x\cot x$
9. $f(x)=\sqrt[3]{x^2-2x}$
10. $f(x)=\dfrac{\sin x-3}{\sin x}$
11. $f(x)=\dfrac{2x-3x^2}{\sqrt{x}}$
12. $f(x)=\cos(\sin 2x)$

Find the equation of the tangent line at the value given.

13. $f(x)=\sqrt[3]{2x-1}$ at x = 14.
14. $f(x)=\dfrac{x-3}{x^2-4}$ at x = -1

Find the indicated derivative.

15. $f(x)=x\sin x$; $f'\left(\dfrac{\pi}{3}\right)$
16. $f(x)=(x-2)^3(2x-3)^4$; $f'(-1)$

Answers!

1. $6\cos 3x$

2. $2x^3(2x-1)^2(7x-2)$

3. $-2\csc 2x \cdot \cot 2x$

4. $\dfrac{10}{(4x-1)^2}$

5. $\dfrac{-4x}{(4x^2-3)^{3/2}}$

6. $\dfrac{-2x}{(x^2-3)^2}$

7. $-18\cos^2 3x \cdot \sin 3x$

8. $\cot x - x\csc^2 x$

9. $\dfrac{2(x-1)}{3(x^2-2x)^{2/3}}$

10. $-3\csc x \cot x$

11. $\dfrac{1}{\sqrt{x}} - \dfrac{9\sqrt{x}}{2}$

12. $-2\cos 2x \cdot \sin(\sin 2x)$

13. $y-3=\dfrac{2}{27}(x-14)$

14. $y-\dfrac{4}{3}=-\dfrac{11}{9}(x+1)$

15. $\dfrac{\sqrt{3}}{2}+\dfrac{\pi}{6}$

16. 43,875