Derivatives of Exponential Functions - Key

In problems 1-8, find the derivative

1. $f'(x)=7e^{7x-1}$	2. $f'(x)=(2x-3)e^{x^2-3x+1}$
3. $f'(x)=\dfrac{e^{\sqrt{x-1}}}{2\sqrt{x-1}}$ or $\dfrac{e^{\sqrt{x-1}}}{2(x-1)^{1/2}}$	4. $f'(x)=\dfrac{4e^{\sqrt[3]{4x-1}}}{3(4x-1)^{2/3}}$
5. $f'(x)=\dfrac{6e^{-2/x^3}}{x^4}$	6. $f'(x)=3x^2e^{8x+3}+8x^3e^{8x+3}$ or $f'(x)=x^2e^{8x+3}(3+8x)$
7. $f'(x)=\dfrac{e^{x^2-3}\left(2xe^x+4x-e^x\right)}{\left(e^x+2\right)^2}$	8. $f'(x)=e^{5x-1}\left(\dfrac{1}{2\sqrt{x}}+5\sqrt{x}\right)$ or $f'(x)=\dfrac{e^{5x-1}(1+10x)}{2\sqrt{x}}$

In problems 9-10, Find the slope of the tangent line at the given point

9. $m=8e$	10. $m=-3$

In problems 11-13, Find the equation of the tangent line at the given point

11. $y=4ex+e$	12. $y=\dfrac{-3}{e}x+\dfrac{1}{e}$
13. $y=5x-4$	

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In problems 14-15, Find dy/dx implicitly

14. $y' = \frac{8 - 2xe^{y}}{x^{2}e^{y} + 2y}$ *or* $y' = \frac{-8x + 2y^{2}}{8x^{2} - xy^{2} + 2xy}$	15. $y' = \frac{12x^{2}e^{4x+2} + 16x^{3}e^{4x+2} - ye^{xy}}{xe^{xy} + 2y}$