CH.2 AB HW Derivative of Graphs and Charts Name_____

Find each derivative
Find $h'(x)$.

1) $h(x) = f(x) \cdot g(x)$

2) $h(x) = \dfrac{g(x)}{f(x)}$

3) $h(x) = \left(g(x)\right)^3$

4) $h(x) = f(9x)$

5) $h(x) = g\left(x^2\right)$

6) $h(x) = f\left(g(x)\right)$

7) $h(x) = f\left(x^2\right) \cdot g(4x)$

8) $h(x) = \dfrac{f(x)}{x^3}$

$$f(2) = 4 \qquad f'(2) = -8 \qquad f(4) = -2 \qquad f'(4) = 1$$
$$g(2) = 2 \qquad g'(2) = 6 \qquad g(4) = 3 \qquad g'(4) = -5$$

9) Use information above to find $h'(x)$ and $h'(2)$. Write equation of the tangent line at 2.

   a) $h(x) = \dfrac{f(2x)}{g(x)}$

   b) $h(x) = g\left(f(x)\right)$

x	0	8	16	24	32	40	48	56
$f(x)$	82	75	65	70	78	81	80	74

Use chart above for #10 (Show the work that leads to your answers)

10a) Find $f'(8)=$ b) Find $f'(36)=$

c) Find $f'(44)=$ d) Find $f'(24)=$

Evaluate #11-14

11) $\lim\limits_{h\to 0}\dfrac{\tan 3(x+h)-\tan 3x}{h}=$ 12) $\lim\limits_{h\to 0}\dfrac{(2+h)^4-16}{h}=$

13) $\lim\limits_{h\to 0}\dfrac{\sqrt{x+h}-\sqrt{x}}{h}=$ 14) $\lim\limits_{h\to 0}\dfrac{10(2+h)^3-80}{h}=$

Use picture below for #15

15a) Find $f'(1)=$ b) Find $f'(3)=$ c) Find $f'(4)\doteq$

d) Find $f'(6)=$ e) Find $f'(7.5)=$ f) Equation of tangent line at 4