Definition of the Derivative – "Backwards" Practice

1. $\displaystyle\lim_{x\to\pi}\frac{\cos x + 1}{x - \pi}$	10. $\displaystyle\lim_{x\to 0}\frac{(3+x)^3 - 27}{x}$
2. $\displaystyle\lim_{h\to 0}\frac{\sin^2(3x+3h) - \sin^2(3x)}{h}$	11. $\displaystyle\lim_{x\to\frac{\pi}{4}}\frac{\tan x - 1}{x - \frac{\pi}{4}}$
3. $\displaystyle\lim_{h\to 0}\frac{(x+h)^5 - x^5}{h}$	12. $\displaystyle\lim_{h\to 0}\frac{\cos(\pi + h) + 1}{h}$
4. $\displaystyle\lim_{h\to 0}\frac{2(x+h)^{\frac{3}{2}} - 2x^{\frac{3}{2}}}{h}$	Butterfly Math
5. $\displaystyle\lim_{x\to 0}\frac{\sin(\frac{\pi}{2}+x) - 1}{x}$	14. $\displaystyle\lim_{h\to 0}\frac{|3+h| - 3}{h}$
6. $\displaystyle\lim_{h\to 0}\frac{3(x+h)^4 - 4(x+h)^2 + (x+h) - 3x^4 + 4x - x}{h}$	15. $\displaystyle\lim_{x\to 81}\frac{\sqrt[4]{x} - 3}{x\ \ 81}$
7. $\displaystyle\lim_{t\to 1}\frac{t^{1000} - 1}{t - 1}$	16. $\displaystyle\lim_{h\to 0}\frac{(x-h)^{\frac{1}{3}} - 2}{h}$
8. $\displaystyle\lim_{x\to 1}\frac{4x^5 - 4}{x - 1}$	17. $\displaystyle\lim_{h\to 0}\frac{6\left(\frac{1}{2}+h\right)^6 - 6\left(\frac{1}{2}\right)^6}{h}$
9. $\displaystyle\lim_{x\to 0}\frac{\sqrt{4+x} - 2}{x}$	18. $\displaystyle\lim_{h\to 0}\frac{\frac{2}{(2+h)^3} - \frac{1}{4}}{h}$