CW 5.6-5.8 L'hopital and Inverse Trig

For #'s 1-8, Evaluate the Limits. Use L'hopitals when applicable.

1. $\lim\limits_{x\to\infty} \dfrac{\ln x}{\sqrt[3]{x}}$	2. $\lim\limits_{x\to 0} \dfrac{\sin x - x}{x^2}$
3. $\lim\limits_{x\to -3^+} \dfrac{x+2}{x+3}$	4. $\lim\limits_{x\to\infty} x^{\frac{1}{x}}$
5. $\lim\limits_{x\to\infty} \dfrac{\cos x}{x^4}$	6. $\lim\limits_{x\to\infty} \dfrac{3^x}{x}$
7. $\lim\limits_{x\to 0} \dfrac{\tan x}{2x+1}$	8. $\lim\limits_{x\to\infty} \left(e^x+1\right)^{-\frac{1}{\sqrt{x}}}$ **(do last)**

For #'s 9-12 Find the derivative. Simply answers when possible.

9. $y = \cos^{-1}\left(\sin x\right)$	10. $y = \dfrac{1}{\tan^{-1} x}$
11. $y = \ln\left(\cos^{-1}\left(2x\right)\right)$	12. $y = \sin^{-1}\left(x^2 \ln x\right)$

For #'s 13-16 Integrate.

13. $\int \dfrac{dx}{\sqrt{1-4x^2}}$	14. $\int \dfrac{dx}{x\sqrt{x^4-4}}$
15. $\int \dfrac{dx}{x^2-6x+18}$	16. $\int \dfrac{x-3}{x^2+1}\,dx$
17. $\int_1^3 \dfrac{dx}{\sqrt{x}\left(x+1\right)}$	