1) Define arccos(x) to be the angle $\theta$ in $[0, \pi]$ st. $\cos \theta = x$.

The following exercises are meant to allow you to apply the same sort of reasoning as we used to study arctan(x) & arcsin(x).

a) Why do we use $[0, \pi]$ instead of $[-\pi/2, \pi/2]$ (like with arcsin x)?

b) Sketch the graph of arccos(x). What is its domain & range?

c) Evaluate $\sin(\text{arccos}(-1/2))$.

d) Use implicit differentiation to find $\frac{d}{dx}(\text{arccos}(x))$.

//comment: arcsinx is used more often in integrals. Try to guess why.
2. a) Find \( \frac{d}{dx} \arcsin(\sqrt{x}) \). 

b) Find \( \frac{d}{dx} \arctan\left(\frac{x}{2}\right) \).

3. a) Find \( \int \frac{e^x}{1+e^{2x}} \, dx \)

b) Find \( \int_0^{\pi/2} \frac{\sin x}{1+\cos^2 x} \, dx \)

4. a) Find \( \int \frac{1}{25+x^2} \, dx \)

b) Find \( \int \frac{1}{\sqrt{a-x^2}} \, dx \)

//Hint: try to scale the numerator & denominator to get a more familiar form.