Calculus II
Practice Problems 3

1. Differentiate: $f(x) = \sqrt{\dfrac{2x-6}{3x+5}}$.

2. a) $\tan(\arccos x) =$

   b) $\dfrac{1}{x^2} - \tan^2(\arccos x) =$

3. Differentiate $y = \arccos\sqrt{x}$.

4. Differentiate $g(x) = \arcsin(\ln x)$.

5. Integrate

   a) $\displaystyle\int_0^2 \dfrac{x\,dx}{1+4x^2} =$

   b) $\displaystyle\int_0^2 \dfrac{dx}{1+4x^2} =$

6. Integrate:

   a) $\displaystyle\int \dfrac{e^x\,dx}{e^{2x}+1} =$

   b) $\displaystyle\int \dfrac{dx}{e^x + e^{-x}} =$

   c) $\displaystyle\int \dfrac{dx}{\sqrt{5 - 4x - x^2}} =$

8. Integrate:

   a) $\displaystyle\int \tan^2 x\,dx =$

   b) $\displaystyle\int \tan^3 x\,dx =$

9) $\displaystyle\int x\tan^2 x\,dx = .$

10) $\displaystyle\int \dfrac{dx}{x^2 - 6x + 13} = .$