Math 101 Tutorial Worksheet 3

There is an associated quiz due on BrightSpace on Tuesday, February 1 at 10:00 PM

1. For each of the following integrals, identify possible techniques that could be used to solve them. Complete integration, showing every step along the way.

   (a) $\displaystyle\int \frac{\sqrt{\arccos(x)}}{\sqrt{1-x^2}}dx$

   (b) $\displaystyle\int_0^{\pi/4} \sqrt{1-\cos 4\theta}d\theta$

   (c) $\displaystyle\int_0^{\pi/6} \sqrt{1+\cos(2x)}dx$

   (d) $\displaystyle\int \frac{x^2dx}{(x^2-1)^{\frac{5}{2}}}, x>1$

   (e) $\displaystyle\int \frac{s^4+81}{s\left(s^2+9\right)^2}ds$

   (f) $\displaystyle\int_0^1 \frac{dx}{(x+1)\left(x^2+1\right)}$

   (g) $\displaystyle\int_0^{3\sqrt{3}/2} \frac{x^3}{(4x^2+9)^{\frac{3}{2}}}dx$ [Using a trig. substitution]

   (h) $\displaystyle\int \frac{y^4-2y^2+4y+1}{y^3-y^2-y+1}dy;$

   (i) $\displaystyle\int_0^1 \frac{x^2}{x^4-1}dx$