This is not an assignment, but it is good practice.

We have the needed background to do all the integrals below. See if you can figure out how. You may have to complete the square at times or do something like $9 + x^2 = 9\left(\left(\frac{x}{3}\right)^2 + 1\right)$.

1. $\displaystyle\int \frac{1}{x^2+1}\,dx$
2. $\displaystyle\int \frac{3x}{x^2+1}\,dx$
3. $\displaystyle\int \frac{1}{(x-5)^2+1}\,dx$
4. $\displaystyle\int \frac{5}{1+(3x+4)^2}\,dx$
5. $\displaystyle\int \frac{1}{x^2+9}\,dx$
6. $\displaystyle\int \frac{1}{\sqrt{1-(2x+5)^2}}\,dx$
7. $\displaystyle\int \frac{1}{\sqrt{9-x^2}}\,dx$
8. $\displaystyle\int \frac{1}{x^2+6x+10}\,dx$
9. $\displaystyle\int \frac{1}{x^2-10x+26}\,dx$
10. $\displaystyle\int \frac{7x}{9+x^2}\,dx$
11. $\displaystyle\int \frac{1}{x^2-10x+34}\,dx$

Note: In examples 9 and 11 above, we will soon see that it is very important that the denominator does not factor.