Find the integral.

1. \[\int \sqrt{81-x^2} \, dx\]

   Hints:  
   1. Use the substitution \( x = 9\sin(\theta) \)
   2. You will need to use trigonometric identities to write the integrand as a function of \( \cos(2\theta) \).
   3. You will need to convert the answer involving \( \theta \) back to \( x \) by writing \( \theta \) as a function of \( x \).
   (Review your notes on inverse trigonometric functions. page 145)

2. \[\int \sin^2(x) \, dx\]

   Hint: Use a trigonometric identity to write the integrand as a trigonometric function to the first power.