SECTION 4.9 ANTIDERIVATIVES

1. Find a particular antiderivative of $f(x) = 9 + x - x^2$.

2. Find all antiderivatives of $f(x) = 9 + x - x^2$.

3. Find an antiderivative of $f(x) = \frac{1}{x^2}$.

4. To find *all* antiderivatives of a function $f(x)$, do you always just add a $+C$?

5. For each of the following functions, find a particular antiderivative.

Function	Antiderivative
x	
x^2	
x^3	
x^k ($k \neq -1$)	
x^{-1} for $x > 0$	
x^{-1} for $x < 0$	
x^{-1} for all x	

Function	Antiderivative
$\sin(x)$	
$\cos(x)$	
e^x	
$1/(1+x^2)$	
$\sec^2(x)$	
$\sec(x)\tan(x)$	
1	

6. Compute an antiderivative of $f(x) = 15x^{20} + 44x^{10} + 8$

7. Compute an antiderivative of $f(t) = \dfrac{5\sec t \tan t}{3} - 4\sin t - \dfrac{1}{t} + e^2$

8. Compute an antiderivative of $f(x) = \cos(3x)$.

9. Compute the antiderivative of $f(t) = t^2$ that equals 5 when $t = 2$.