MATH 2320 Test 1 version 2

Name:_____

1. Using the **definition** of the integral compute
$$\int_0^2 x^2 + 3\,dx.$$
2. Let acceleration be given by $a(t) = 4\sin(3t)$. And let $v_0 = 4$ and $s_0 = -3$. Find v and s. What is the velocity when $t = \pi$ sec? What is the maximum height (that is what is the maximum s)?
3. Find the area between the functions $y = \frac{1}{4}\ln(x)$, $y = x$, $y = 0$, and $y = 5$.
4. Find the volume of the solid formed when rotating the region in the first quadrant bounded by $y = x^2 + 2$ and $y = 8 - x$ and the y-axis around the x-axis.
5. Two easy integrals:
   (a) $\int \sin(4x)\,dx$
   (b) $\int \sec(6x)\,dx$
6. $\int \ln^2(x)\,dx$ Try $u = (\ln(x))^2$ and $dv = 1dx$.
7. $\int \frac{e^{3x}}{\cos(e^{3x}+1)}\,dx$
8. $\int \cos^2(x-2)\,dx$
9. $\int \sin^3(2x)\cos^{-1/2}(2x)\,dx$
10. $\int \frac{2x+4}{\sqrt{1-x^2}}\,dx$ Try splitting the integral into two separate integrals