MATH 2320 Test 1

Name:_____

1. Using the **definition** of the integral compute

$$\int_0^4 x + 4\,dx.$$

2. Find the area between the functions $y = x^3$, $y = 4x$ in the first quadrant.

3. Find the volume of the solid formed when rotating the region bounded by $y = 2x$ and $y = 6 - x$ and the x-axis around the x-axis.

4. $\int xe^{2x}\,dx$

5. $\int x \ln(x)\, dx$

6. $\int x^3 \cos(x^4 + 1)\, dx$

7. $\int \sin(3x)\cos(3x)\,dx$

take home An MLB pitcher can throw a baseball about 90 mph. If he throws the baseball straight up at 90 mph how high does the baseball go? To my knowledge most MLB pitchers are on earth. However if one iis on the planet Pluto and that baseball pitcher throws the baseball straight up on Pluto, how high does the ball go?

some helpful information

- acceleration due to gravity on earth $a(t) = -9.8\ meters/sec^2$
- acceleration due to gravity on pluto $a(t) = -0.42\ meters/sec^2$

	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
$\sin(x)$	0	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$	1
$\cos(x)$	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0
$\tan(x)$	0	$1/\sqrt{3}$	1	$\sqrt{3}$	$\pm\infty$