$+ \frac{13}{13}$

Math 252 Homework 4 Written Part   Name: _KEY_

Write legibly.   Show your work.   Graph neatly.   Use a ruler for all straight lines.

(1) Fill in the anti-derivative of each function. Don't forget the +C ! ← forget? (-2)

Function	Anti-Derivative
example: $f(x) = x^3 + 5x$	answer: $F(x) = \dfrac{x^4}{4} + \dfrac{5x^2}{2} + C$
$f(x) = x^n$	$F(x) = \dfrac{1}{n+1} x^{n+1} + C$ ✓
$f(x) = \sin(x)$	$F(x) = -\cos(x) + C$ ✓
$f(x) = \cos(x)$	$F(x) = \sin(x) + C$ ✓
$f(x) = e^x$	$F(x) = e^x + C$ ✓

Showing your work neatly, completely, and correctly, find each integral.
   Notice that you should write each step going DOWN the page.

(2) $\displaystyle\int_0^3 (x^2 - 6x)\, dx$

$= \dfrac{x^3}{3} - 3x^2 \Big]_0^3$ ✓

$= \left(\dfrac{3^3}{3} - 3(3)^2 \right) - (0)$

$= 9 - 27$

$= \boxed{-18}$ ✓

(3) $\displaystyle\int_1^8 x^{\frac{-2}{3}}\, dx$

$= 3x^{\frac{1}{3}} \Big]_1^8$ ✓

$= 3(8)^{\frac{1}{3}} - 3(1)^{\frac{1}{3}}$

$= 3(2) - 3(1)$

$= 6 - 3$

$= \boxed{3}$ ✓

(4) $\displaystyle\int_0^\pi \sin(x)\, dx$

$= -\cos(x) \Big]_0^\pi$ ✓

$= -\cos(\pi) - {}^- \cos(0)$

$= -(-1) + 1$

$= \boxed{2}$ ✓

↑ oh! that's the same answer we got at the end of HW3!