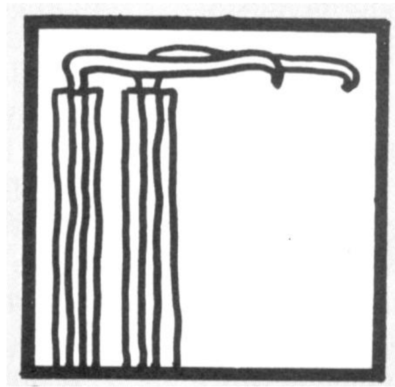
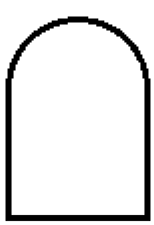
Turvy with Applications of the Integral -- Answer Key by David Pleacher



Here is the title right-side-up: Two candles in a hurricane

Here is the title upside-down: Uncle Sam wearing elf shoes

Integral Application Problems:		Corresponding Answer:	
1.	Find the area in square units bounded by the curves $y = x^3 - 2x^2$ and $y = 2x^2 - x^3$.	D.	$\frac{8}{3}$
2.	Using your calculator, determine the area of a region bounded by the curves $y = \sin x$, $y = 3x$, and $y = 30 - 3x$.	F.	73.228
3.	Determine the area of the region bounded by $x = (y-2)^2$ and $y = 4 - x$.	G.	$\frac{9}{2}$
4.	The figure below is a square of base 4 meters topped by a semicircle. What is the average height of this figure?	M.	$\frac{\pi}{2} + 4$



Integral Application Problems:		Corresponding Answer:	
5.	Determine the area bounded by $x = 2y^2 - 5$ and $x = y^2 + 4$.	U.	36
6.	Determine the area bounded by $y = x$, $y = -\frac{x}{2}$ and $y = 5$.	O.	$\frac{75}{2}$
7.	Determine the area of the region bounded by $y = \sin x$, $y = \csc^2 x$, $x = \frac{\pi}{4}$ and $x = \frac{3\pi}{4}$.	I.	$2 - \sqrt{2}$
8.	Determine the area of the region IN THE FIRST QUADRANT bounded by the curves by $y = \sin x \cos^2 x$, $y = 2x\cos\left(x^2\right)$ and $y = 4 - 4x$.	L.	0.379
9.	Determine the number a so that $\int_2^5 x^2\,dx$ is the same as $\int_2^5 a\,dx$.	H.	13
10.	A solid is formed by revolving around the x-axis the region bounded by the x-axis and the curve $y = \sqrt{\sin x}$ for $0 \le x \le \pi$. Determine the volume of the solid.	C.	2π
11.	The acceleration function (in meters per second) and initial velocity are given for an object moving along a straight line: $a(t) = 4t - 1, \quad v(0) = -6$. Determine the total distance traveled by the object in the first 5 seconds.	T.	$\frac{349}{6}$
12.	Determine the volume of the solid that results when the region between the curve $y = x$ and the x-axis, from $x = 0$ to $x = 1$, is revolved around the x-axis.	W.	$\frac{\pi}{3}$

Integral Application Problems:		Corresponding Answer:	
13.	Determine the volume of the solid that results when the region bounded by $y = x$ and $y = x^2$, from $x = 0$ to $x = 1$, is revolved about the x-axis.	R.	$\frac{2\pi}{15}$
14.	Determine the volume of the solid that results when the region bounded by $x = y^2$ and $x = y^3$, from $y = 0$ to $y = 1$, is revolved about the y-axis.	N.	$\frac{2\pi}{35}$
15.	Determine the volume of the solid that results when the region bounded by $y = x^2$ and $y = 4x$, is revolved about the line $y = -2$.	A.	$\frac{896\pi}{5}$
16.	Determine the volume of the solid that results when the region bounded by $y = 2\sqrt{x}$, $x = 4$ and $y = 0$, is revolved around the y-axis (use cylindrical shells).	S.	$\frac{256\pi}{5}$
17.	Determine the volume of the solid that results when the region bounded by $y = x^3$, $x = 2$ and the x-axis, is revolved around the line $x = 2$.	E.	$\frac{16\pi}{5}$