AP Calculus AB Fundamental Theorem of Calculus

Evaluate the definite integral of the algebraic function.

1) $\int_0^1 2x\,dx$ 1

2) $\int_{-1}^0 (x-2)\,dx$ $-\frac{5}{2}$

3) $\int_{-1}^1 (t^2-2)dt$ $-\frac{10}{3}$

4) $\int_0^1 (2t-1)^2\,dt$ $\frac{1}{3}$

5) $\int_1^2 \left(\frac{3}{x^2}-1\right)dx$ $\frac{1}{2}$

6) $\int_1^4 \frac{u-2}{\sqrt{u}}\,du$ $\frac{2}{3}$

7) $\int_{-1}^1 (\sqrt[3]{t}-2)\,dt$ -4

8) $\int_0^1 \frac{x-\sqrt{x}}{3}\,dx$ $-\frac{1}{18}$

9) $\int_{-1}^0 (t^{1/3}-t^{2/3})\,dt$ $-\frac{27}{20}$

10) $\int_0^3 |2x-3|\,dx$ $\frac{9}{2}$

11) $\int_0^3 |x^2-4|\,dx$ $\frac{23}{3}$

12) $\int_0^\pi (1+sinx)\,dx$ $2+\pi$

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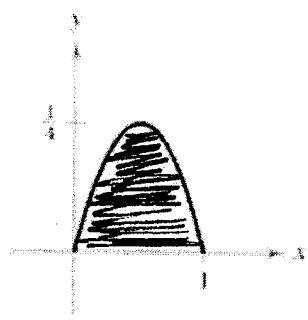
13) $\int_{-\pi/6}^{\pi/6} sec^2 x\, dx$ $\frac{2}{\sqrt{3}}$

14) $\int_{-\pi/3}^{\pi/3} 4 \sec\theta \tan\theta\, d\theta$ 0

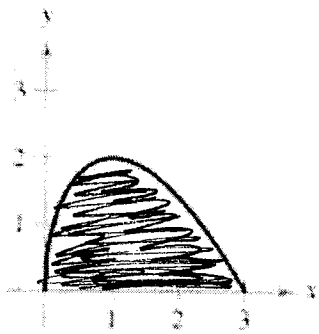
Determine the area of the given region.

15) $y = x - x^2$



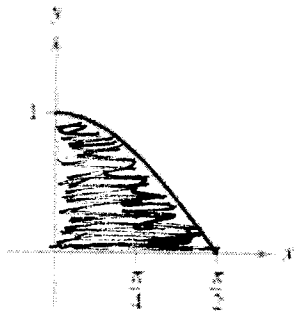
$\frac{1}{6}$

16) $y = (3 - x)\sqrt{x}$



$2(3)^{3/2} - \frac{2}{5}(3)^{5/2}$

17) $y = \cos x$



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