<32>

(a) $\int_0^2 g(x)dx = \frac{1}{2}\cdot 4\cdot 2 = 4$ (area of a $\triangle$).

(b) $\int_2^6 g(x)dx = -\frac{1}{2}\pi(2)^2 = -2\pi$ (negative of the area of a semicircle).

(c) $\int_0^7 g(x)dx = \int_0^2 g(x)dx + \int_2^6 g(x)dx + \int_6^7 g(x)dx$

$$= 4 - 2\pi + \frac{1}{2}\cdot 1\cdot 1 = 4 - 2\pi + \frac{1}{2} = 4.5 - 2\pi.$$

<9> $\int_2^{10}\sqrt{x^3+1}\,dx$, $n=4$.

$\Delta x = \frac{10-2}{4} = 2$, so the endpoints are $2, 4, 6, 8, 10$.

Then the midpoints are $3, 5, 7$, and 9.

$$\int_2^{10}\sqrt{x^3+1}\,dx \approx \sum_{i=1}^{4} f(\bar{x}_i)\Delta x = 2\left(\sqrt{3^3+1} + \sqrt{5^3+1} + \sqrt{7^3+1} + \sqrt{9^3+1}\right)$$

$$\approx 124.1644$$

<5> $\Delta x = \frac{8-0}{4} = 2$. Then endpoints are $0, 2, 4, 6, 8$.

Midpoints are $1, 3, 5$, and 7.

c) $\sum_{i=1}^{4} f(\bar{x}_i)\Delta x = 2\left(f(1) + f(3) + f(5) + f(7)\right) \approx 2\left(3 + 2 + 1 + (-1)\right) = 10.$

a) 4

b) 6.