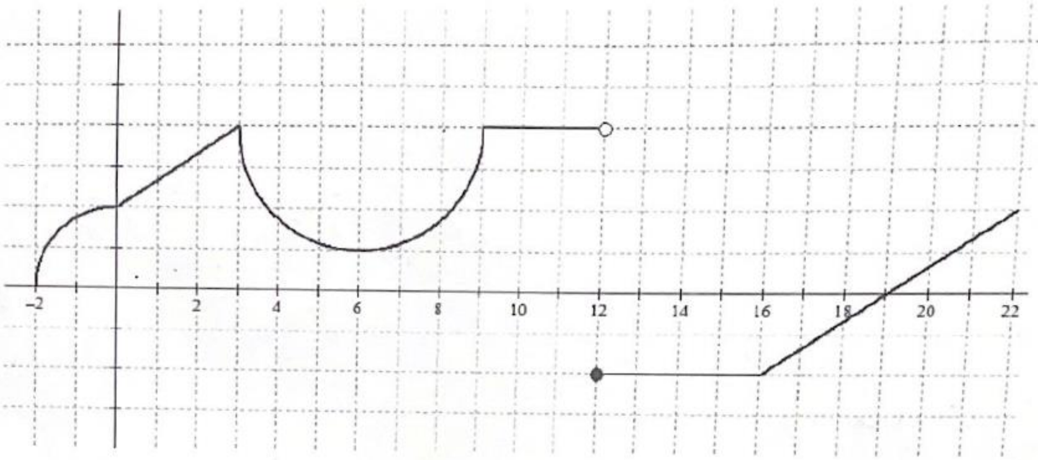
In the chart below, either a definite integral or a limit of a Riemann sum has been provided. Fill in the box with the orresponding missing information

	Definite Integral	Limit of Riemann Sum
1	$\int_0^6 \sqrt{2x+1}\,dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} \sqrt{2\left(\frac{6i}{n}\right)+1} \cdot \frac{6}{n}$
2	$\int_2^7 (x^2-3)\,dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} \left[\left(2+\frac{5i}{n}\right)^2-3\right]\cdot\frac{5}{n}$
3	$\int_1^5 (3x-7)\,dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} \left[3\left(1+\frac{4i}{n}\right)-7\right]\cdot\frac{4}{n}$
4	$\int_{-2}^{4} x^3\,dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} \left(-2+\frac{6i}{n}\right)^3 \cdot \frac{6}{n}$
5	$\int_{-2}^{0} (x^2+1)\,dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} \left[\sqrt{\left(-2+\frac{2i}{n}\right)^2+1}\right]\cdot\frac{2}{n}$
6	$\int_0^3 e^x\,dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} e^{\frac{3i}{n}} \cdot \frac{3}{n}$
7	$\int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} \cos x \cdot dx$	$\lim_{n\to\infty} \sum_{i=1}^{n} \cos\left(\frac{\pi}{2}+\frac{\pi i}{n}\right)\cdot\frac{\pi}{2n}$



The graph above consists of a quarter circle, a half circle, and four line segments. For each of the expressions below (either definite integral or limit of Riemann sum), fill in the missing information. Then determine the value of each integral using geometric formulas (without using a calculator).

	Limit of Riemann Sum	Definite Integral	Value of Definite Integral
8	$\lim_{n\to\infty}\sum_{i=1}^{n}(-2)\left(\frac{4}{n}\right)$	$\int_{12}^{16}(-2)\,dx$	$4(-2)=-8$
9	$\lim_{n\to\infty}\sum_{i=1}^{n}\left[4-\sqrt{9-(3+\frac{6i}{n}-6)^2}\right]\frac{6}{n}$	$\int_3^9\left[4-\sqrt{9-(x-6)^2}\right]dx$	$6(4)-\frac{1}{2}\pi(3)^2$ $24-\frac{9\pi}{2}$
10	$\lim_{n\to\infty}\sum_{i=1}^{n}\left[\frac{2}{3}\left(\frac{3i}{n}\right)+2\right]\cdot\frac{3}{n}$	$\int_0^3\left(\frac{2}{3}x+2\right)dx$	$\frac{1}{2}(2+4)\cdot 3=\boxed{9}$
11	$\lim_{n\to\infty}\sum_{k=1}^{n}\left[\frac{2}{3}\left(\left(16+\frac{6k}{n}\right)-19\right)\right]\cdot\frac{6}{n}$	$\int_{16}^{22}\left(\frac{2}{3}x-19\right)dx$	0
12	$\lim_{n\to\infty}\sum_{i=1}^{n}4\cdot\frac{3}{n}$	$\int_9^{12}4\,dx$	$3(4)=12$