

1. $\int_a^b 1 dx$ **Solution:** (L)
2. $\int_a^b f(x) dx$ **Solution:** (R)
3. $\int_C 1 ds$ **Solution:** (N)
4. $\int_a^b |\mathbf{r}'(t)| dt$ **Solution:** (K)
5. $\int_C f ds$ **Solution:** (H)
6. $\int_a^b f(\mathbf{r}(t)) |\mathbf{r}'(t)| dt$ **Solution:** (E)
7. $\int_C \mathbf{F} \cdot \mathbf{T} ds$ **Solution:** (D)
8. $\int_a^b \mathbf{F}(\mathbf{r}(t)) \cdot \mathbf{r}'(t) dt$ **Solution:** (C)
9. $\iint_D 1 dA$ **Solution:** (G)
10. $\iint_D f(x, y) dA$ **Solution:** (J)
11. $\iint_S 1 dS$ **Solution:** (Q)
12. $\iint_D |\mathbf{r}_u \times \mathbf{r}_v| dA$ **Solution:** (P)
13. $\iint_S f(x, y, z) dS$ **Solution:** (I)
14. $\iint_D f(\mathbf{r}(u, v)) |\mathbf{r}_u \times \mathbf{r}_v| dA$ **Solution:** (A)
15. $\iint_S \mathbf{F} \cdot \mathbf{n} dS$ **Solution:** (O)
16. $\iint_D \mathbf{F} \cdot (\mathbf{r}_u \times \mathbf{r}_v) dA$ **Solution:** (F)
17. $\iiint_E 1 dV$ **Solution:** (M)
18. $\iiint_E f dV$ **Solution:** (B)

- (A) Surface integral of a scalar field in parameterized form which gives the mass of a surface
- (B) Triple integral which gives the mass of a 3D solid
- (C) Line integral of a vector field in parameterized form which gives work done
- (D) Line integral of a vector field which gives work done
- (E) Line integral of a scalar field in parameterized form which gives the mass of a wire
- (F) Surface integral of a vector field in parameterized form which gives flux
- (G) Double integral which gives an area
- (H) Line integral of a scalar field which gives the mass of a wire
- (I) Surface integral of a scalar field which gives the mass of a surface
- (J) Double integral which gives a volume
- (K) Line integral of a scalar field in parameterized form which gives the length of a curve
- (L) Single integral which gives the length of an interval
- (M) Triple integral which gives volume
- (N) Line integral of a scalar field which gives the length of a curve
- (O) Surface integral of a vector field which gives flux
- (P) Surface integral of a scalar field in parameterized form which gives a surface area
- (Q) Surface integral of a scalar field which gives a surface area
- (R) Single integral which gives the area of a region