1. Find the integral of $\frac{5}{8} e^{4t}(2 t^2 + t + 3)$ with respect to t.

- $\frac{5}{16} e^{4t} t^2 + \frac{5}{16} e^{4t} t + \frac{15 e^{4t}}{32}$ +constant

- $\frac{25}{32} e^{4t} t + \frac{5 e^{4t}}{32}$ +constant

- $\frac{5}{192} e^{4t} t (4 t^2 + 3 t + 18)$ +constant

- $\frac{5}{16} e^{4t} t^2 + \frac{15 e^{4t}}{32}$ +constant

2. Find the integral: $\int \frac{9}{2} e^{-2x}(x^2 + x + 1)\, dx$.

- $-\frac{9}{4} e^{-2x} x^2 - \frac{27}{4} e^{-2x} x - \frac{27 e^{-2x}}{4}$ +constant

- $-\frac{9}{4} e^{-2x} x^2 - \frac{9}{2} e^{-2x} x - \frac{9 e^{-2x}}{2}$ +constant

- $-\frac{9}{4} e^{-2x} x^2$ +constant

- $-\frac{3}{8} e^{-2x} x (2 x^2 + 3 x + 6)$ +constant

3. What is $\int \frac{3}{5} \left(2\,t^2 + t + 4\right) \cos(2\,t)\,dt$?

- $\frac{3}{5}\,t^2 \sin(2\,t) + \frac{3}{10}\,t\sin(2\,t) + \frac{3}{2}\sin(2\,t) - \frac{3}{5}\,t\cos(2\,t) - \frac{3}{20}\cos(2\,t)$ +constant

- $\frac{1}{20}\,t\left(4\,t^2 + 3\,t + 24\right)\sin(2\,t)$ +constant

- $\frac{3}{5}\,t^2 \sin(2\,t) + \frac{3}{10}\,t\sin(2\,t) + \frac{9}{10}\sin(2\,t) + \frac{3}{5}\,t\cos(2\,t) + \frac{3}{20}\cos(2\,t)$ +constant

- $\frac{6}{5}\,t\sin(2\,t) + \frac{3\cos^2(t)}{10} + \frac{3}{5}\,t\cos(2\,t)$ +constant

4. Integrate $\frac{4}{5}\left(2\,t^2 + 2\,t + 2\right)\sin(t)$ with respect to t.

- $-\frac{8}{5}\,t^2 \cos(t) + \frac{16}{5}\,t\sin(t) + \frac{8\sin(t)}{5} - \frac{8}{5}\,t\cos(t) + \frac{8\cos(t)}{5}$ +constant

- $\frac{16}{5}\,t\sin(t) + \frac{8\sin(t)}{5} - \frac{16}{5}\,t\cos(t) + \frac{8\cos(t)}{5}$ +constant

- $-\frac{4}{15}\,t\left(2\,t^2 + 3\,t + 6\right)\cos(t)$ +constant

- $-\frac{8}{5}\,t^2 \cos(t) - \frac{16}{5}\,t\sin(t) - \frac{8\sin(t)}{5} - \frac{8}{5}\,t\cos(t) - \frac{24\cos(t)}{5}$ +constant

5. Find the integral of $\frac{5}{9} e^t \cos(2t)$ with respect to t.

  ○ $\frac{2}{9} e^t \sin(2t) + \frac{1}{9} e^t \cos(2t)$
    $+ \text{constant}$

  ○ $\frac{5}{18} e^t \sin(2t) + \text{constant}$

  ○ $\frac{1}{3} e^t \sin(2t) - \frac{1}{9} e^t \cos(2t)$
    $+ \text{constant}$

  ○ $\frac{1}{6} e^t \sin(2t) + \frac{2}{9} e^t \cos(2t)$
    $+ \text{constant}$

6. What is $\int \frac{1}{2} e^{-2x} x^3 \, dx$?

  ○ $-\frac{9}{8} e^{-2x} x^2 - \frac{3}{8} e^{-2x} x - \frac{3 e^{-2x}}{16}$
    $+ \text{constant}$

  ○ $-\frac{1}{4} e^{-2x} x^3 + \frac{3}{8} e^{-2x} x^2 +$
    $\frac{3}{8} e^{-2x} x + \frac{3 e^{-2x}}{16} + \text{constant}$

  ○ $-\frac{1}{16} e^{-2x} x^4 + \text{constant}$

  ○ $-\frac{1}{4} e^{-2x} x^3 - \frac{3}{8} e^{-2x} x^2 -$
    $\frac{3}{8} e^{-2x} x - \frac{3 e^{-2x}}{16} + \text{constant}$

7. What is $\int \frac{8}{7} e^t \sin(2\,t)\,dt$?

- ○ $\frac{8}{35} e^t \sin(2\,t) - \frac{16}{35} e^t \cos(2\,t)$ +constant

- ○ $-\frac{8}{35} e^t \sin(2\,t) - \frac{24}{35} e^t \cos(2\,t)$ +constant

- ○ $\frac{16}{35} e^t \sin(2\,t) - \frac{12}{35} e^t \cos(2\,t)$ +constant

- ○ $-\frac{4}{7} e^t \cos(2\,t)$ +constant

8. Find the integral: $\int \frac{2}{9} t^3 \cos(t)\,dt$.

- ○ $\frac{2}{9} t^3 \sin(t) + \frac{2}{3} t^2 \cos(t) - \frac{4}{3} t \sin(t) - \frac{4\cos(t)}{3}$ +constant

- ○ $\frac{1}{18} t^4 \sin(t)$ +constant

- ○ $\frac{2}{3} t^2 \sin(t) + \frac{2}{3} t^2 \cos(t) - \frac{4}{3} t \sin(t) - \frac{4\cos(t)}{3}$ +constant

- ○ $\frac{2}{9} t^3 \sin(t) - \frac{2}{3} t^2 \cos(t) + \frac{4}{3} t \sin(t) + \frac{4\cos(t)}{3}$ +constant

9. What is $\int \frac{2}{3} t^4 \sin(2\,t)\,dt$?

○ $-\frac{1}{15} t^5 \cos(2\,t) +$ constant

○ $-\frac{1}{3} t^4 \cos(2\,t) + \frac{2}{3} t^3 \sin(2\,t) +$
$t^2 \cos(2\,t) - t\sin(2\,t) -$
$\frac{1}{2}\cos(2\,t) +$ constant

○ $-\frac{1}{3} t^4 \cos(2\,t) - \frac{2}{3} t^3 \sin(2\,t) -$
$t^2 \cos(2\,t) + t\sin(2\,t) +$
$\frac{1}{2}\cos(2\,t) +$ constant

○ $-\frac{1}{3} t^4 \cos(2\,t) +$
$\frac{4}{3} t^3 \sin(2\,t) + 2\,t^2 \cos(2\,t) -$
$2\,t\sin(2\,t) - \cos(2\,t) +$ constant

10. Find the integral: $\int \frac{7}{4}(t^2 + 3\,t + 1)$
$\sin(3\,t)\,dt$.

○ $-\frac{7}{12} t^2 \cos(3\,t) + \frac{7}{18} t\sin(3\,t) +$
$\frac{7}{12}\sin(3\,t) - \frac{7}{4} t\cos(3\,t) -$
$\frac{49}{108}\cos(3\,t) +$ constant

○ $-\frac{7}{72} t(2\,t^2 + 9\,t + 6)\cos(3\,t)$
$+$ constant

○ $\frac{7}{18} t\sin(3\,t) +$
$\frac{7}{12}\sin(3\,t) - \frac{7}{6} t\cos(3\,t) -$
$\frac{175}{108}\cos(3\,t) +$ constant

○ $-\frac{7}{12} t^2 \cos(3\,t) - \frac{7}{18} t\sin(3\,t) -$
$\frac{7}{12}\sin(3\,t) - \frac{7}{4} t\cos(3\,t) -$
$\frac{77}{108}\cos(3\,t) +$ constant

11. Find the integral of $\frac{5}{6} e^x \cos(x)$ with respect to x.

○

○ $\frac{5}{3} e^x \sin(x) - \frac{5}{6} e^x \cos(x) + $ constant

○ $\frac{5}{4} e^x \sin(x) - \frac{5}{12} e^x \cos(x)$ + constant

○ $\frac{5}{6} e^x \sin(x)$ + constant

○ $\frac{5}{12} e^x \sin(x) + \frac{5}{12} e^x \cos(x)$ + constant

12. Find the integral: $\int \frac{4}{9} x^3 \sin(3x)\, dx$.

○ $-\frac{4}{27} x^3 \cos(3x) - \frac{4}{27} x^2 \sin(3x) + \frac{8}{243} \sin(3x) - \frac{8}{81} x \cos(3x)$ + constant

○ $-\frac{1}{27} x^4 \cos(3x)$ + constant

○ $-\frac{4}{27} x^3 \cos(3x) + \frac{4}{27} x^2 \sin(3x) - \frac{8}{243} \sin(3x) + \frac{8}{81} x \cos(3x)$ + constant

○ $\frac{4}{27} x^2 \sin(3x) - \frac{4}{9} x^2 \cos(3x) - \frac{8}{243} \sin(3x) + \frac{8}{81} x \cos(3x)$ + constant

13. What is $\int_4^5 t \ln(2\,t)\,dt$?

- $\frac{5}{8} t^2 \ln(2\,t) + \frac{5\,t^2}{16} + \text{constant}$

- $\frac{5}{8} t^3 (\log(2\,t) - 1) + \text{constant}$

- $\frac{5}{8} t^2 \ln(2\,t) - \frac{5\,t^2}{16} + \text{constant}$

- $\frac{5}{8} t^2 \ln(2\,t) - \frac{5\,t^2}{8} + \text{constant}$

14. Find the integral: $\int_9^8 t^4 \cos(t)\,dt$.

- $\frac{8}{9} t^4 \sin(t) - \frac{32}{9} t^3 \cos(t) + \frac{32}{3} t^2 \sin(t) - \frac{64 \sin(t)}{3} + \frac{64}{3} t \cos(t) + \text{constant}$

- $\frac{32}{9} t^3 \sin(t) + \frac{32}{9} t^3 \cos(t) - \frac{32}{3} t^2 \sin(t) + \frac{64 \sin(t)}{3} - \frac{64}{3} t \cos(t) + \text{constant}$

- $\frac{8}{45} t^5 \sin(t) + \text{constant}$

- $\frac{8}{9} t^4 \sin(t) + \frac{32}{9} t^3 \cos(t) - \frac{32}{3} t^2 \sin(t) + \frac{64 \sin(t)}{3} - \frac{64}{3} t \cos(t) + \text{constant}$

15. Find the integral of $\frac{4}{7}(x^2 + 3x + 1)$ $\sin(4x)$ with respect to x.

○ $-\frac{1}{42} x \left(2x^2 + 9x + 6\right) \cos(4x)$ +constant

○ $-\frac{1}{7} x^2 \cos(4x) + \frac{1}{14} x \sin(4x) +$ $\frac{3}{28} \sin(4x) - \frac{3}{7} x \cos(4x) -$ $\frac{1}{8} \cos(4x)$ +constant

○ $-\frac{1}{7} x^2 \cos(4x) - \frac{1}{14} x \sin(4x) -$ $\frac{3}{28} \sin(4x) - \frac{3}{7} x \cos(4x) -$ $\frac{9}{56} \cos(4x)$ +constant

○ $-\frac{1}{14} x \sin(4x) -$ $\frac{3}{28} \sin(4x) - \frac{2}{7} x \cos(4x) -$ $\frac{25}{56} \cos(4x)$ +constant

16. Find the integral: $\int \frac{2}{5} e^{-x} (x^2 + 2x + 2) \, dx$.

○ $\frac{4 e^{-x}}{5} - \frac{2}{5} e^{-x} x^2$ +constant

○ $-\frac{2}{5} e^{-x} x^2 - \frac{8 e^{-x} x}{5} - \frac{12 e^{-x}}{5}$ +constant

○ $\frac{4 e^{-x}}{5}$ +constant

○

$-\frac{2}{15} e^{-x} x \left(x^2 + 3x + 6\right)$ +constant

17. Find the integral of $\frac{5}{9} x^3 \sin(2x)$ with respect to x.

○ $-\frac{5}{18} x^3 \cos(2x) +$
   $\frac{5}{12} x^2 \sin(2x) - \frac{5}{24}\sin(2x) +$
   $\frac{5}{12} x \cos(2x) +$ constant

○ $-\frac{5}{18} x^3 \cos(2x) -$
   $\frac{5}{12} x^2 \sin(2x) + \frac{5}{24}\sin(2x) -$
   $\frac{5}{12} x \cos(2x) +$ constant

○ $\frac{5}{12} x^2 \sin(2x) - \frac{5}{6} x^2 \cos(2x) -$
   $\frac{5}{24}\sin(2x) + \frac{5}{12} x \cos(2x)$
   $+$ constant

○ $-\frac{5}{72} x^4 \cos(2x) +$ constant

18. Integrate $\frac{1}{2} e^{-3t} t^3$ with respect to t.

○ $-\frac{1}{6} e^{-3t} t^3 - \frac{1}{6} e^{-3t} t^2 -$
   $\frac{1}{9} e^{-3t} t - \frac{e^{-3t}}{27} +$ constant

○ $-\frac{1}{3} e^{-3t} t^2 + \frac{1}{9} e^{-3t} t + \frac{e^{-3t}}{27}$
   $+$ constant

○ $-\frac{1}{24} e^{-3t} t^4 +$ constant

○ $-\frac{1}{6} e^{-3t} t^3 + \frac{1}{6} e^{-3t} t^2 +$
   $\frac{1}{9} e^{-3t} t + \frac{e^{-3t}}{27} +$ constant

19. Integrate $\frac{2}{5} e^x \sin(x)$ with respect to x.

○

$\frac{1}{5} e^x \sin(x) - \frac{1}{5} e^x \cos(x) + \text{constant}$

○ $-\frac{2}{5} e^x \cos(x) + \text{constant}$

○ $-\frac{2}{5} e^x \sin(x) - \frac{4}{5} e^x \cos(x) + \text{constant}$

○ $-\frac{1}{5} e^x \sin(x) - \frac{3}{5} e^x \cos(x) + \text{constant}$

20. Integrate $\frac{5}{6} t^3 \ln(4\,t)$ with respect to t.

○ $\frac{5}{24} t^4 \ln(4\,t) - \frac{5\,t^4}{96} + \text{constant}$

○ $\frac{5}{24} t^4 \ln(4\,t) + \frac{5\,t^4}{96} + \text{constant}$

○ $\frac{5\,t^3}{24} - \frac{5\,t^4}{96} + \text{constant}$

○ $\frac{5}{24} t^5 (\log(4\,t) - 1) + \text{constant}$