W9 - P1

In[1]:= `Integrate[x^7, x] + C`

Out[1]= $C + \frac{x^8}{8}$

In[2]:= `Integrate[2 y^5, y] + C`

Out[2]= $C + \frac{y^6}{3}$

In[3]:= `Integrate[x^1.3, x] + C`

Out[3]= $C + 0.434783\, x^{2.3}$

In[4]:= `Integrate[4/g^5 - 3/g^2, g] + C`

Out[4]= $C - \frac{1}{g^4} + \frac{3}{g}$

In[5]:= `Integrate[Sqrt[x^7], x] + C`

Out[5]= $C + \frac{2\, x \sqrt{x^7}}{9}$

In[6]:= `Integrate[Cos[4 t], t] + C`

Out[6]= $C + \frac{1}{4} \mathrm{Sin}[4\, t]$

In[7]:= `Integrate[φ^4 - Sin[2 φ], φ] + C`

Out[7]= $C + \frac{\varphi^5}{5} + \frac{1}{2} \mathrm{Cos}[2\, \varphi]$

In[8]:= `Integrate[5/z + Exp[4 z], z] + C`

Out[8]= $C + \frac{e^{4 z}}{4} + 5\, \mathrm{Log}[z]$

In[9]:= `Integrate[ξ (ξ + a) (ξ + b), ξ] + C // Expand`

Out[9]= $C + \frac{1}{2} a\, b\, \xi^2 + \frac{a\, \xi^3}{3} + \frac{b\, \xi^3}{3} + \frac{\xi^4}{4}$

W9 - P2

In[10]:= `Assuming[t > 0, Integrate[n F A c Sqrt[d/(π t)], t] + C // FullSimplify]`

Out[10]= $C + \frac{2\, A\, c\, F\, n \sqrt{d\, t}}{\sqrt{\pi}}$

W9 - P3

In[11]:=
```
Integrate[Cos[3 x]^2, {x, 0, π/2}]
```

Out[11]= $\frac{\pi}{4}$

In[12]:=
```
Integrate[Sin[2 φ] Cos[2 φ], {φ, 0, π/2}]
```

Out[12]= 0

In[13]:=
```
Integrate[Sin[α] Cos[2 α], {α, 0, π}]
```

Out[13]= $-\frac{2}{3}$

W9 - P4

In[14]:=
```
ψ[k_, x_] := Sqrt[2/L] Sin[π k x/L];
```

```
Assuming[L > 0 && n ∈ Integers && n > 0 && m ∈ Integers && m > 0 && m == n,
 Integrate[ψ[n, x] ψ[m, x], {x, 0, L}]]
```

Out[15]= 1

In[16]:=
```
Assuming[L > 0 && n ∈ Integers && n > 0 && m ∈ Integers && m > 0 && m ≠ n,
 Integrate[ψ[n, x] ψ[m, x], {x, 0, L}]]
```

Out[16]= 0

W9 - P2

In[17]:=
```
Integrate[1/(x^2 - 9), x] + C
```

Out[17]= $C + \frac{1}{6} \mathrm{Log}[3 - x] - \frac{1}{6} \mathrm{Log}[3 + x]$

In[18]:=
```
Integrate[1/(x^2 + 4), x] + C
```

Out[18]= $C + \frac{1}{2} \mathrm{ArcTan}\left[\frac{x}{2}\right]$

In[19]:=
```
Integrate[(x + 1)/(2 x + 1), x] + C
```

Out[19]= $C + \frac{1}{4} \left(1 + 2 x + \mathrm{Log}[1 + 2 x]\right)$