เฉลยแบบฝึกหัด 9.2

1. $\displaystyle\int \frac{x+5}{x^2+x-2}\,dx = 2\ln|x-1| - \ln|x+2| + c$

2. $\displaystyle\int \frac{x^3+x^2+2x+1}{(x^2+1)(x^2+2)}\,dx = \frac{1}{2}\ln(x^2+1) + \frac{1}{2}\sqrt{2}\arctan(\frac{x\sqrt{2}}{2}) + c$

3. $\displaystyle\int \frac{x}{x-5}\,dx = x + 5\ln|x-5| + c$

4. $\displaystyle\int \frac{x+4}{x^2+2x+5}\,dx = \frac{1}{2}\ln(x^2+2x+5) + \arctan(\frac{x}{2}+\frac{1}{2}) + c$

5. $\displaystyle\int \frac{3x-1}{(x+1)^2}\,dx = \frac{4}{x+1} + 3\ln|x+1| + c$

6. $\displaystyle\int \frac{1}{x^3-1}\,dx = \frac{1}{3}\ln|x-1| - \frac{1}{6}\ln(x^2+x+1) - \frac{\sqrt{3}}{3}\arctan(\frac{2\sqrt{3}x+\sqrt{3}}{3}) + c$

7. $\displaystyle\int \frac{4y^2-7y-12}{y(y+2)(y-3)}\,dy = \frac{1}{3}\ln|y-3| + 2\ln|y| + \frac{9}{5}\ln|y+2| + c$

   $\displaystyle\int \frac{10}{(t^2+9)(t-1)}\,dt = -\frac{1}{2}\ln(t^2+9) + \frac{1}{3}\arctan(\frac{t}{3}) + \ln|t-1| + c$

8. $\displaystyle\int \frac{1}{(x+5)^2(x-1)}\,dx = \frac{1}{36}\ln|x-1| - \frac{1}{36}\ln|x+5| + \frac{1}{6(x+5)} + c$

9. $\displaystyle\int_{2}^{5} \frac{x^2+2x}{x^3+3x^2+4}\,dx = \frac{1}{3}\ln(\frac{17}{2})$

10. $\displaystyle\int \frac{x^2}{(x-2)^3}\,dx = \frac{2}{x+1} - \frac{1}{2(x+1)^2} + \ln|x+1| + c$

11. $\displaystyle\int \frac{x-3}{x^2+2x+4}\,dx = \frac{1}{2}\ln\left(x^2+2x+4\right) - \frac{4}{\sqrt{3}}\arctan(\frac{\sqrt{3}x+\sqrt{3}}{3}) + c$