Solutions

Each answer shows the steps, then the **result**.

2.1

- Complete-the-square / arctangent form (basic arctangent rule)

2.2

- Substitution, $u = x^5 + 2$

2.3

- Basic — split into $x + \frac{1}{x}$ first

3.1 C

- $2x$ is the derivative of x^2, so substitute $u = x^2$

3.2

- $\dfrac{x^2+3}{x} = x + \dfrac{3}{x}$; $\int \left(x + \frac{3}{x}\right) dx = \frac{x^2}{2} + 3\ln|x| + C$

3.3

- $u = x^2 + 1$, $du = 2x\,dx$, so $6x\,dx = 3\,du$; $\int \frac{3}{u}\,du = 3\ln|u| = 3\ln(x^2+1) + C$