Key

Homework Set 3

(sect 5.3: The Indefinite Integral)

Find the general antiderivative of the given functions.

1. $f(x) = 271$ $F(x) =$ $271x + C$

2. $g(x) = e^x - \frac{1}{2\sqrt{x}}$ $G(x) =$ $e^x - \sqrt{x} + C$

3. $h(x) = -4\sec^2 x$ $H(x) =$ $-4\tan x + C$

4. $k(x) = 2e^x - x^3 + 1$ $K(x) =$ $2e^x - \frac{1}{4}x^4 + x + C$

5. $p(x) = 3x^2 - \cos x + \frac{2}{x^2}$ $P(x) =$ $x^3 - \sin x - \frac{2}{x} + C$

Compute the given indefinite integrals.

6. $\int x^7\,dx =$ $\frac{1}{8}x^8 + C$

7. $\int 2^x\,dx =$ $\frac{2^x}{\ln 2} + C$

8. $\int \frac{3}{t}\,dt =$ $3\ln t + C$

9. $\int (1 - 14x)\,dx =$ $x - 7x^2 + C$

10. $\int \pi\,dz =$ $\pi \cdot z + C$

11. $\int \sqrt[3]{t^5}\,dt =$ $\int t^{5/3}\,dt = \frac{3}{8}t^{8/3} + C$

12. $\int (2x^5 - 3x^3 + x^2 - 7)\,dx =$ $\frac{1}{3}x^6 - \frac{3}{4}x^4 + \frac{1}{3}x^3 - 7x + C$

13. $\int \frac{5}{1+s^2}\,ds =$ $5\arctan(s) + C$

14. $\int 2\sin x\,dx =$ $-2\cos x + C$

15. $\int \frac{1}{\sqrt{1-x^2}}\,dx =$ $\arcsin x + C$