

1) 354) 1.3.

$$a) \int \frac{4x^2 - 5x + 7}{2} dx = \frac{1}{2} \left[\frac{4x^3}{3} - \frac{5x^2}{2} + 7x \right] + k$$

$$b) \int \frac{x dx}{\sqrt[3]{x}} = \int x^{1-\frac{1}{3}} dx = \int x^{\frac{2}{3}} dx = \frac{x^{\frac{2}{3}+1}}{\frac{2}{3}+1} = \frac{x^{\frac{5}{3}}}{\frac{5}{3}} + k$$

$$= \frac{3x \sqrt[3]{x^2}}{5} + k$$

$$c) \int \frac{1}{2x+7} dx = \frac{1}{2} \ln|2x+7| + k$$

$$d) \int (x - \sin x) dx = \frac{x^2}{2} - \cos x + k$$

$$2) a) \int (x^2 + 1)^2 dx = \int (x^4 + 2x^2 + 1) dx = \frac{x^5}{5} + \frac{2x^3}{3} + x + k$$

$$b) \int (x-5)^3 dx = \frac{(x-5)^4}{4} + k$$

$$c) \int \sqrt{3x+5} dx = \int (3x+5)^{\frac{1}{2}} dx = \frac{1}{3} \frac{(3x+5)^{\frac{1}{2}+1}}{\frac{1}{2}+1} + k = \frac{2}{9} \sqrt{(3x+5)^3} + k$$

$$d) \int (\cos x + e^x) dx = \int \cos x dx + \int e^x dx = \sin x + e^x + k$$

$$3) a) \int \sqrt[3]{\frac{x^4}{2}} dx = \int \sqrt[3]{\frac{1}{2}} x^{\frac{4}{3}} dx = \sqrt[3]{\frac{1}{2}} \cdot \frac{x^{\frac{4}{3}+1}}{\frac{4}{3}+1} = \sqrt[3]{\frac{1}{2}} \frac{x^{\frac{7}{3}}}{\frac{7}{3}}$$

$$= \frac{3}{5 \sqrt[3]{2}} \sqrt[3]{x^7} + k$$

$$b) \int \frac{7}{\cos^2 x} dx = 7 \tan x + k$$

$$c) \int \sin(x-4) dx = -\cos(x-4) + k$$

$$d) \int (e^{2x} + 3e^{-x}) dx = \int e^{2x} dx + \int 3e^{-x} dx = \frac{1}{2} e^{2x} + 3(-1)e^{-x} + k$$

$$= \frac{1}{2} e^{2x} - 3e^{-x} + k$$