

$$333 \quad 1) a) \int x^4 dx = \frac{x^5}{5} + K$$

$$b) \int (5x^3 - 8x^2 + 2x - 3) dx = \left( \frac{5x^4}{4} - \frac{8x^3}{3} + \frac{2x^2}{2} - 3x \right) + K$$

$$c) \int \sqrt[3]{x} dx = \frac{x^{1/3+1}}{\frac{1}{3}+1} + K = \frac{x^{4/3}}{4/3} + K = \frac{3}{4} x^{4/3} + K$$

$$d) \int \frac{1}{\sqrt{x}} dx = \int x^{-1/2} dx = \frac{x^{-1/2+1}}{-1/2+1} + K = \frac{\sqrt{x}}{1/2} + K = 2\sqrt{x} + K$$

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

$$f) \int \frac{3}{x^2} dx = \int 3x^{-2+1} dx = \frac{3x^{-1}}{-2+1} = -\frac{3}{x} + K$$

$$g) \int \frac{5}{6x^6} dx = \frac{5}{6} \int x^{-6+1} dx = \frac{5x^{-5}}{-5+1} + K = -\frac{5}{18x^5} + K$$

$$h) \int \frac{\sqrt[3]{2x}}{\sqrt{3x}} dx = \int \frac{\sqrt[3]{2} x^{1/3-1/2}}{\sqrt{3}} dx = \sqrt[3]{2} \int x^{-1/6} dx = \sqrt[6]{4} \cdot \frac{x^{5/6}}{5/6} =$$

$$i) \int \frac{\sqrt[3]{x} + \sqrt{5x^3}}{3x} dx = \int \frac{\frac{1}{3} x^{1/3} + \sqrt{5} x^{1/2}}{3x} dx = \frac{1}{3} \left[ \frac{x^{1/3}}{1/3} + \frac{\sqrt{5} \cdot x^{1/2}}{1/2} \right] =$$

$$j) \int (\sqrt{5x-3})^4 dx = \frac{1}{5} \int (5x-3)^4 dx = \frac{1}{3} \left[ 3\sqrt[3]{x} + \frac{2}{3} \sqrt{5} x \sqrt{x} \right] =$$

$$\frac{1}{5} \left[ \frac{(5x-3)^4}{4+1} + K \right] = \frac{(5x-3)^5}{25} + K = \left( \sqrt[3]{x} + \frac{2\sqrt{5} \cdot x \sqrt{x}}{3} \right) + K.$$

$$k) \int \sqrt[3]{(7x-6)^2} dx = \int (7x-6)^{2/3} dx = \frac{1}{\frac{7}{3}} \frac{(7x-6)^{2/3+1}}{2/3+1} + K = \frac{3}{7} \frac{(7x-6)^{5/3}}{5} + K$$

$$l) \int \frac{5x^3 + 6x^2 - \sqrt{2}x + \sqrt{3}}{x} dx = \frac{3}{35} \sqrt[3]{(7x-6)^2} (7x-6)$$

$$\int (5x^4 + 6x^3 - \sqrt{2}x^2 + \sqrt{3}x^{-1}) dx = \frac{5}{3} x^3 + \frac{6}{2} x^2 - \sqrt{2} x + \sqrt{3} \ln|x| + K$$

$$m) \int \frac{2x^4 - 6x^3 + 5x}{x+2} dx$$

$\frac{2x^4 - 6x^3 + 5x}{x+2}$   
 $= 2x^4 - 4x^3 + 10x^2 - 35x$   
 $+ 20x^2 - 10x^3 + 20x - 35 + \frac{70}{x+2}$   
 $\boxed{x^4 - \frac{10x^3}{3} + \frac{20x^2}{2} - 35x + 70 \ln|x+2| + k}$

$$n) \int \frac{5dx}{6-4x} = \int \frac{5dx}{-4x+6} = -\frac{5}{4} \ln|4x-6| + dx$$

$\frac{2x^4 + 6x - 3}{x-2}$   
 $\int \frac{2x^3 + 4x^2 + 8x + 22 + \frac{41}{x-2}}{x-2}$

$$\bar{n}) \int \frac{2x^4 + 6x - 3}{x-2} dx$$

$\left( 2x^3 + 4x^2 + 8x + 22 + \frac{41}{x-2} \right) dx =$   
 $= \left( \frac{x^4}{2} + \frac{4}{3}x^3 + 4x^2 + 22x + 41 \ln|x-2| \right) + k$

$$o) \int \frac{7x^4 - 5x^2 + 3x - 4}{x^2} dx$$

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