

Calculus  
= 25-44

$$(25) \frac{-9t^{-1.5}}{-1.5} - 2\ln t + C = \frac{6}{t^{1.5}} - 2\ln|t| + C$$

$$(26) = \frac{10x^{-2.5}}{-2.5} + 4\ln|x| + C = \frac{-4}{x^{2.5}} + 4\ln|x| + C$$

$$(27) \int \frac{1}{3}x^{-2} dx = \frac{1}{3}x^{-1} = \frac{-1}{3x} + C$$

$$(28) \int \frac{2}{3}x^{-4} dx = \frac{2}{3} \frac{x^{-3}}{-3} + C = \frac{-2}{9x^3} + C$$

$$(29) \frac{3e^{-2x}}{-2} + C = \frac{-15e^{-2x}}{1} + C$$

$$(30) \frac{-4e^{-2v}}{2} + C = \frac{-20e^{-2v}}{1} + C$$

$$(31) = -3\ln|x| + \frac{4e^{-.4x}}{-.4} + e^{-1}x + C$$

$$= -3\ln|x| - 10e^{-.4x} + e^{-1}x + C$$

$$(32) = 9\ln|x| - \frac{3e^{-.4x}}{-.4} + C = 9\ln|x| + 7.5e^{-.4x} + C$$

$$\textcircled{33} \int \left( \frac{1}{4} t^{-1} - \frac{1}{2} t^2 \right) dt = \frac{1}{4} \ln|t| + \frac{1}{2} \frac{t^3}{3} + C$$

$$= \frac{1}{4} \ln|t| + \frac{t^3}{6} + C$$

$$\textcircled{34} \int \left( \frac{1}{3} y^{-1/2} - \frac{1}{2} y \right) dy = \frac{1}{3} \frac{y^{1/2}}{\frac{1}{2}} - \frac{1}{2} \frac{y^2}{2} + C = \frac{2}{3} \sqrt{y} - \frac{y^2}{4} + C$$

$$\textcircled{35} = \frac{e^{2u}}{2} + \frac{4u^2}{2} + C = \frac{e^{2u}}{2} + 2u^2 + C$$

$$\textcircled{36} = \frac{v^3}{3} - \frac{e^{3v}}{3} + C = \frac{1}{3} v^3 - \frac{1}{3} e^{3v} + C$$

$$\textcircled{37} \int (x^2 + 2x + 1) dx = \frac{x^3}{3} + \frac{2x^2}{2} + x + C = \frac{1}{3} x^3 + x^2 + x + C$$

$$\textcircled{38} \int (4y^2 - 4y + 1) dy = \frac{4y^3}{3} - \frac{4y^2}{2} + y + C = \frac{4}{3} y^3 - 2y^2 + y + C$$

$$\textcircled{39} \int \left( \frac{x^{1/2}}{x^{1/3}} + x^{-1/3} \right) dx = \int \left( x^{1/6} + x^{-1/3} \right) dx = \frac{x^{7/6}}{7/6} + \frac{x^{2/3}}{2/3} + C$$

$$\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$$

$$= \frac{6}{7} x^{7/6} + \frac{3}{2} x^{2/3} + C$$

$$\textcircled{40} \int (z^{-1/3} - 2) dz = \frac{z^{2/3}}{2/3} - 2z + C = \frac{3}{2} z^{2/3} - 2z + C$$

$$\textcircled{41} = \frac{10^x}{\ln 10} + C$$

$$\textcircled{42} = \frac{3^{2x}}{\ln 3 \cdot 2} + C = \frac{3^{2x}}{2 \ln 3} + C$$

$$\textcircled{43} \quad f(x) = \frac{x^{5/2}}{5/2} + C = \frac{2}{5} x^{5/2} + C \quad \text{plug in } \left(1, \frac{3}{5}\right)$$

$$\frac{3}{5} = \frac{2}{5} \left(1^{5/2}\right) + C \Rightarrow \frac{3}{5} = \frac{2}{5} + C$$

$$0 = C$$

$$f(x) = \frac{2}{5} x^{5/2}$$

$$\textcircled{44} \quad f(x) = \frac{6x^2}{3} - \frac{4x^2}{2} + 3x + C$$

$$1 = 0 - 0 + 0 + C$$

$$1 = C$$

$$f(x) = 2x^3 - 2x^2 + 3x + 1$$