Differentiation Formulas / Solutions

① $y' = -\frac{2}{5}x^{-7/5}$

② $V'(r) = 4\pi r^2$

③ $y' = 0$ since π is constant

④ $y = \frac{x^2 + 4x + 3}{x^{1/2}} = x^{3/2} + 4x^{1/2} + 3x^{-1/2}$

$y' = \frac{3}{2}x^{1/2} + 2x^{-1/2} - \frac{3}{2}x^{-3/2}$

⑤ $v = t^2 - \frac{1}{\sqrt[4]{t^3}} = t - \frac{1}{t^{3/4}} = t - t^{-3/4}$

$v' = 1 + \frac{3}{4}t^{-7/4}$

⑥ $f'(x) = x^2 e^x + 2xe^x$

⑦ $h(x) = \frac{(x-1) - (x+2)}{(x-1)^2} = \frac{-3}{(x-1)^2}$

⑧ $y' = \frac{(3t^2 - 2t + 1)(2t) - (t^2)(6t-2)}{(3t^2 - 2t + 1)^2}$

⑨ $y = v^2 - 2\sqrt{v} = v^2 - 2v^{1/2}$

$y' = 2v - v^{-1/2}$