

$$\text{1ai)} \quad y = \frac{x^2}{2x+1}$$

$$u = x^2$$

$$v = 2x+1$$

$$\frac{du}{dx} = 2x$$

$$\frac{dv}{dx} = 2$$

$$\frac{dy}{dx} = \frac{2x+1(2x) - x^2(2)}{(2x+1)^2}$$

$$= \frac{4x^2 + 2x - 2x^2}{(2x+1)^2}$$

$$\frac{dy}{dx} = \frac{2x^2 + 2x}{(2x+1)^2}$$

$$\text{ii} \quad y = \sqrt{x^2+1} \rightarrow y = (x^2+1)^{\frac{1}{2}}$$

$$\frac{dy}{dx} = \frac{1}{2} (x^2+1)^{-\frac{1}{2}} (2x)$$

$$\frac{dy}{dx} = \cancel{\frac{1}{2} \cdot 2} x (x^2+1)^{-\frac{1}{2}}$$