

Math Exam

$$u = x^2 \quad v = 2x+1$$

$$du = 2x \quad dv = 2$$

$$1. a) y = \frac{x^2}{2x+1}$$

$$u \frac{dv}{dx} - v \frac{du}{dx}$$

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

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

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

$$c) y = \sqrt{x^2+1}$$

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

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

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