

- Sec 9.6: The chain Rule and the power Rule:-

Differentiate the functions:-

$$\boxed{6} \quad g(x) = (3-2x)^{10}$$

$$\begin{aligned} \rightarrow g'(x) &= 10(3-2x)^9 (-2) \\ &= -20(3-2x)^9 \end{aligned}$$

$$\boxed{14} \quad g(x) = \frac{1}{4x^3+1}$$

$$\begin{aligned} \rightarrow g'(x) &= \frac{(4x^3+1)(0) - 1(4x^{\frac{3}{2}})x^2}{(4x^3+1)^2} \\ &= \frac{-12x^2}{(4x^3+1)^2} \end{aligned}$$

$$\boxed{20} \quad y = \frac{5\sqrt{1-x^3}}{6} = \frac{5}{6}(1-x^3)^{\frac{1}{2}}$$

$$\begin{aligned} \rightarrow y' &= \frac{5}{6} \left(\frac{1}{2}\right) (1-x^3)^{-\frac{1}{2}} (-3x^2) \\ &= -\frac{15}{12} x^2 (1-x^3)^{-\frac{1}{2}} = \frac{-15x^2}{12(1-x^3)^{\frac{1}{2}}} = \frac{-15x^2}{12\sqrt{1-x^3}} \\ &= \frac{-5x^2}{4\sqrt{1-x^3}} \end{aligned}$$