

$$11. f(x) = (7x-1)^{\frac{2}{3}} \quad [-8, 4]$$

$$\begin{aligned} \textcircled{1} \quad f'(x) &= \frac{2}{3}(7x-1)^{\frac{2}{3}-1} \cdot \frac{d}{dx}(7x-1) \\ &= \frac{2}{3}(7x-1)^{-\frac{1}{3}} \cdot 7 \\ &= \frac{2 \cdot 7}{3(7x-1)^{\frac{1}{3}}} \\ &= \frac{14}{3(7x-1)^{\frac{1}{3}}} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 3(7x-1)^{\frac{1}{3}} &= 0 \\ 7x-1 &= 0 \\ 7x &= 1 \\ x &= \frac{1}{7} \quad \text{C.V.} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad x &= -8 \\ y &= (7x-1)^{\frac{2}{3}} \\ &= (7 \cdot (-8) - 1)^{\frac{2}{3}} \\ &= (-57)^{\frac{2}{3}} \\ &= \left(\sqrt[3]{-57}\right)^2 \\ &= \left(\sqrt[3]{57}\right)^2 \\ &= 57^{\frac{2}{3}} \end{aligned}$$

$$\begin{aligned} x &= \frac{1}{7} \\ y &= (7x-1)^{\frac{2}{3}} \\ &= \left(7 \cdot \frac{1}{7} - 1\right)^{\frac{2}{3}} \\ &= 0 \end{aligned}$$

$$\begin{aligned} x &= 4 \\ y &= (7x-1)^{\frac{2}{3}} \\ &= (7 \cdot 4 - 1)^{\frac{2}{3}} \\ &= (27)^{\frac{2}{3}} \\ &= 9 \end{aligned}$$

$$\begin{aligned} &27^{\frac{2}{3}} \\ &\left(27^{\frac{1}{3}}\right)^2 \\ &(\sqrt[3]{27})^2 \\ &\left(\sqrt[3]{3 \cdot 3 \cdot 3}\right)^2 \\ &\quad 3^2 \\ &\quad 9 \end{aligned}$$

Abs min:  $\left(\frac{1}{7}, 0\right)$

Abs max:  $\left(-8, 57^{\frac{2}{3}}\right)$