

(a)

$$\begin{aligned} f'(x) &= \frac{x^{4/5} \left((3x-5)(-x^{-2}+4x) \right)' - (3x-5)(-x^{-2}+4x) (x^{4/5})'}{(x^{4/5})^2} \\ &= \frac{x^{4/5} \left[(3x-5)(-x^{-2}+4x)' + (3x-5)'(-x^{-2}+4x) \right] - (3x-5)(-x^{-2}+4x) \frac{4}{5} x^{-1/5}}{(x^{4/5})^2} \\ &= \frac{x^{4/5} \left[(3x-5)(2x^{-3}+4) + 3(-x^{-2}+4x) \right] - (3x-5)(-x^{-2}+4x) \frac{4}{5} x^{-1/5}}{(x^{4/5})^2} \end{aligned}$$

(b)

$$g'(x) = (\sqrt{x})' + \left(\frac{1}{\sqrt{x}} \right)' + (\sqrt{\pi})'$$

$$= \frac{1}{2} x^{-1/2} + -\frac{1}{2} x^{-3/2} + 0$$

$$= \boxed{\frac{1}{2} x^{-1/2} - \frac{1}{2} x^{-3/2}}$$