

$$q = \frac{1000}{\sqrt{p}} - 1 = \frac{1000}{p^{\frac{1}{2}}} - 1$$

$$= 1000 p^{-\frac{1}{2}} - 1$$

∴ rate of change $\frac{dq}{dp} = q' = 1000 \left(-\frac{1}{2} \right) p^{-\frac{1}{2}-1}$

$$= -500 p^{-\frac{3}{2}}$$

$$= \frac{-500}{p^{\frac{3}{2}}} \quad (p = 2.5 \text{ \$})$$

$$= \frac{-500}{2.5^{\frac{3}{2}}} = \frac{-500}{1.25}$$

if the price change to \$2.6 the quantity demanded will change by approximately $\boxed{-4}$ units.

(b) \$100

$$\frac{dq}{dp} = q' = \frac{-500}{p^{\frac{3}{2}}}$$

$$\frac{dq}{dp} \Big|_{p=100} = \frac{-500}{100^{\frac{3}{2}}} = \frac{-500}{1000} = \boxed{-\frac{1}{2}} = \boxed{-0.5}$$

if the price change to \$101 the quantity demanded will change by approximately -0.5 units