**3** **(a)** Write $\dfrac{\sqrt{p}\left(qr^2\right)^{\frac{1}{3}}}{\left(q^3p\right)^{-1}r^3}$ in the form $p^aq^br^c$, where $a$, $b$ and $c$ are constants. [3]

**(b)** Solve $6x^{\frac{2}{3}} - 5x^{\frac{1}{3}} + 1 = 0$. [3]

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**4** It is given that $y = \dfrac{\tan 3x}{\sin x}$.

**(a)** Find the exact value of $\dfrac{\mathrm{d}y}{\mathrm{d}x}$ when $x = \dfrac{\pi}{3}$. [4]

**(b)** Hence find the approximate change in $y$ as $x$ increases from $\dfrac{\pi}{3}$ to $\dfrac{\pi}{3} + h$, where $h$ is small. [1]

**(c)** Given that $x$ is increasing at the rate of 3 units per second, find the corresponding rate of change in $y$ when $x = \dfrac{\pi}{3}$, giving your answer in its simplest surd form. [2]

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**[Turn over**