

(J)Graphs of the Form $y = \sqrt{f(x)}$

The graph of $y = \sqrt{f(x)}$ can be sketched by first drawing $y = f(x)$ and noticing;

- $\sqrt{f(x)}$ is only defined if $f(x) \geq 0$
- $\sqrt{f(x)} \geq 0$ for all x in the domain
- $\sqrt{f(x)} < f(x)$ if $f(x) > 1$ and $\sqrt{f(x)} > f(x)$ if $f(x) < 1$
- $\frac{dy}{dx} = \frac{f'(x)}{\sqrt{f(x)}}$ implies;

\Rightarrow stationary points must still be stationary points

\Rightarrow there are critical points where $f(x) = 0$

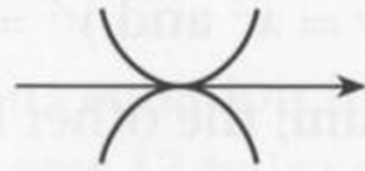
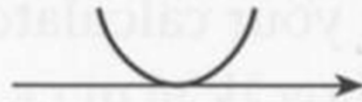
$f(x)$

Graph of $y = f(x)$

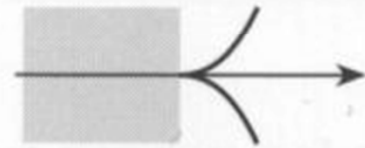
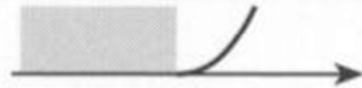
Graph of $y = \sqrt{f(x)}$

Shape of $y^2 = f(x)$

x^4



x^3



x^2



$x^{5/3}$



$x^{3/4}$



$$y = f(x)$$

