

$$\text{Let } f(x) = 2x^2 + kx + 3$$

Find the values of k for which $f(x) > 0$ for all x

This question becomes...

Find the values of k for which the discriminant < 0

$$2x^2 + kx + 3 = 0$$

$$\Delta = b^2 - 4ac$$

$$\Delta = k^2 - 4 \times 2 \times 3$$

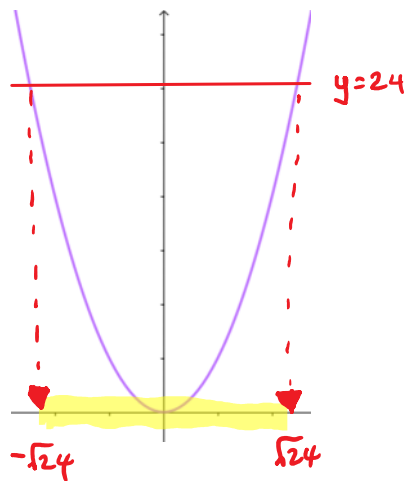
$$\Delta = k^2 - 24$$

$$f(x) > 0 \text{ for all } x$$

$$\Delta < 0$$

$$k^2 - 24 < 0$$

$$k^2 < 24$$



$$\text{Solve } k^2 = 24$$

$$k = \pm\sqrt{24}$$

$$k^2 < 24$$
$$-\sqrt{24} < k < \sqrt{24}$$

