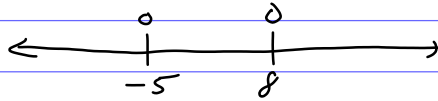First look at $(x+5)^3(x-8)^4 = 0$ ← not the orginal question

(times) ← times, $=$, 0 so we can split

$(x+5)^3 = 0$ ⠀⠀⠀ $(x-8)^4 = 0$

$\sqrt[3]{(x+5)^3} = \sqrt[3]{0}$ ⠀⠀ $\sqrt[4]{(x-8)^4} = \sqrt[4]{0}$

$x+5 = 0$ ⠀⠀⠀⠀ $x-8 = 0$

$x = -5$ ⠀⠀⠀⠀⠀ $x = 8$

	$(-\infty, -5)$	$(-5, 8)$	$(8, \infty)$
$(x+5)^3$	$-$	$+$	$+$
$(x-8)^4$	$+$	$+$	$+$
$(x+5)^3(x-8)^4$	$-$	$+$	$+$

Now to answer the original question:

$(x+5)^3(x-8)^4 > 0$ ⠀ happens when ⠀ x ⠀ is ⠀ $[-5, 8) \cup (8, \infty)$