

$$\lim_{x \rightarrow \infty} \frac{4x^3}{x^2} = \infty$$

or DNE

if HA or you are graphing
then Find Slant!

$$\frac{5x^2}{7x^2}$$

(4)

Product = 192

the sum \rightarrow min

~~secondary~~ $xy = 192$

Primary $x + y = S$

① $x = \frac{192}{y}$

② $\frac{192}{y} + y = S$ or $192y^{-1} + y = S$

$$S' = -192y^{-2} + 1$$

$$0 = -\frac{192}{y^2} + 1$$

$$-1 = -\frac{192}{y^2}$$

$$y^2 = 192$$

$$y = \pm\sqrt{192}$$

$$S' = -192y^{-2} + 1$$

$$S'' = \frac{384}{y^3}$$

Concave \uparrow : $S''(\sqrt{192}) > 0$ (min)Concave \downarrow : $S''(-\sqrt{192}) < 0$ (max)So: S is a min when $y = \sqrt{192}$
 $x = \sqrt{192}$

$$x = \frac{192}{y}$$

$$x = \frac{192}{\sqrt{192}}$$

$$x = \sqrt{192}$$