4. $f(x) = 5x^{\frac{2}{3}} - x^{\frac{5}{3}}$

DOMAIN: $(-\infty, \infty)$

X-INT: $0 = 5x^{\frac{2}{3}} - x^{\frac{5}{3}}$

$0 = x^{\frac{2}{3}}(5 - x^{\frac{3}{3}})$

$0 = x^{\frac{2}{3}}(5 - x)$

$x^{\frac{2}{3}} = 0 \quad 5 - x = 0$

$x = 0 \quad 5 = x$

Y-INT

$y = 0$

ASYMPTOTES

NONE

L.C.T.

DOESN'T APPLY

$x^{\frac{2}{3}} = \sqrt[3]{x^2}$

$x^3 - x^2$

$x^2(x^1 - 1)$

$f'(x) = 5 \cdot \frac{2}{3}x^{\frac{2}{3}-1} - \frac{5}{3}x^{\frac{5}{3}-1}$

$= \frac{10}{3}x^{-\frac{1}{3}} - \frac{5}{3}x^{\frac{2}{3}}$

$= \frac{10}{3x^{1/3}} - \frac{5x^{2/3}}{3}$

$= \frac{10}{3x^{1/3}} - \frac{5x^{2/3} \cdot x^{1/3}}{3x^{1/3}}$

$= \frac{10 - 5x^1}{3x^{1/3}}$

$10 - 5x = 0 \quad 3x^{\frac{1}{3}} = 0$

$10 = 5x \quad x = 0$

$2 = x$

$-\infty$	$x=0$	$x=2$	∞
$x=-1$	$x=1$	$x=3$	
$\frac{10-5x}{3\sqrt[3]{x}}$	$\frac{+}{+}$	$\frac{-}{+}$	
$\frac{+}{-}$	MAX		
MIN			

DEC $(-\infty, 0)$

INC $(0, 2)$

DEC $(2, \infty)$

MIN

$x = 0$

$y = 5x^{\frac{2}{3}} - x^{\frac{5}{3}}$

$y = 5(0)^{\frac{2}{3}} - 0^{\frac{5}{3}}$

$y = 0$

MIN $(0, 0)$

MAX

$x = 2$

$y = 5(2)^{\frac{2}{3}} - 2^{\frac{5}{3}}$

MAX $(2, 4.8)$

$y = 2^{\frac{2}{3}}\left[5 - 2^{\frac{3}{3}}\right]$

$y = 2^{\frac{2}{3}} \cdot 3$

$y = 3\sqrt[3]{2^2}$

$y = 3\sqrt[3]{4}$