6.) Find the following for $f(x) = x^{\frac{3}{2}} - 2x^{\frac{1}{2}} = x^{\frac{1}{2}}(x-2)$ (if they exist; if they don't exist, state so). Use this information to graph f.

Note $f'(x) = \frac{3}{2}x^{\frac{1}{2}} - x^{-\frac{1}{2}} = x^{-\frac{1}{2}}(\frac{3}{2}x - 1)$ and $f''(x) = \frac{3}{4}x^{-\frac{1}{2}} - \frac{-1}{2}x^{-\frac{3}{2}} = x^{-\frac{3}{2}}(\frac{3}{4}x + \frac{1}{2})$

[1] 6a.) critical numbers: $x = 0, \frac{2}{3}$

[1] 6b.) local maximum(s) occur at $x =$ *none*

[1] 6c.) local minimum(s) occur at $x = \frac{2}{3}$

[1] 6d.) The global maximum of f on the interval [0, 5] is $3\sqrt{5}$ and occurs at $x = 5$

[1] 6e.) The global minimum of f on the interval [0, 5] is $-\frac{4}{3}\sqrt{\frac{2}{3}}$ and occurs at $x = \frac{2}{3}$

[1] 6f.) Inflection point(s) occur at $x =$ *none*

[1] 6g.) f increasing on the intervals $(\frac{2}{3}, \infty)$

[1] 6h.) f decreasing on the intervals $(0, \frac{2}{3})$

[1] 6i.) f is concave up on the intervals $[0, \infty)$

[1] 6j.) f is concave down on the intervals *none*

[1] 6k.) What is the domain of f? $[0, \infty)$

[1] 6l.) What is the range of f? $[-\frac{4}{3}\sqrt{\frac{2}{3}}, \infty)$

[4] 6m.) Graph f