(Q2)
In order to find and classify all critical points, we require the first and second derivatives of f:

$$f'(x) = x^{2/5} - x^{-4/5}$$
$$f''(x) = \frac{2}{5}x^{-3/5} + \frac{4}{5}x^{-9/5}$$

Solving f and f' for 0:

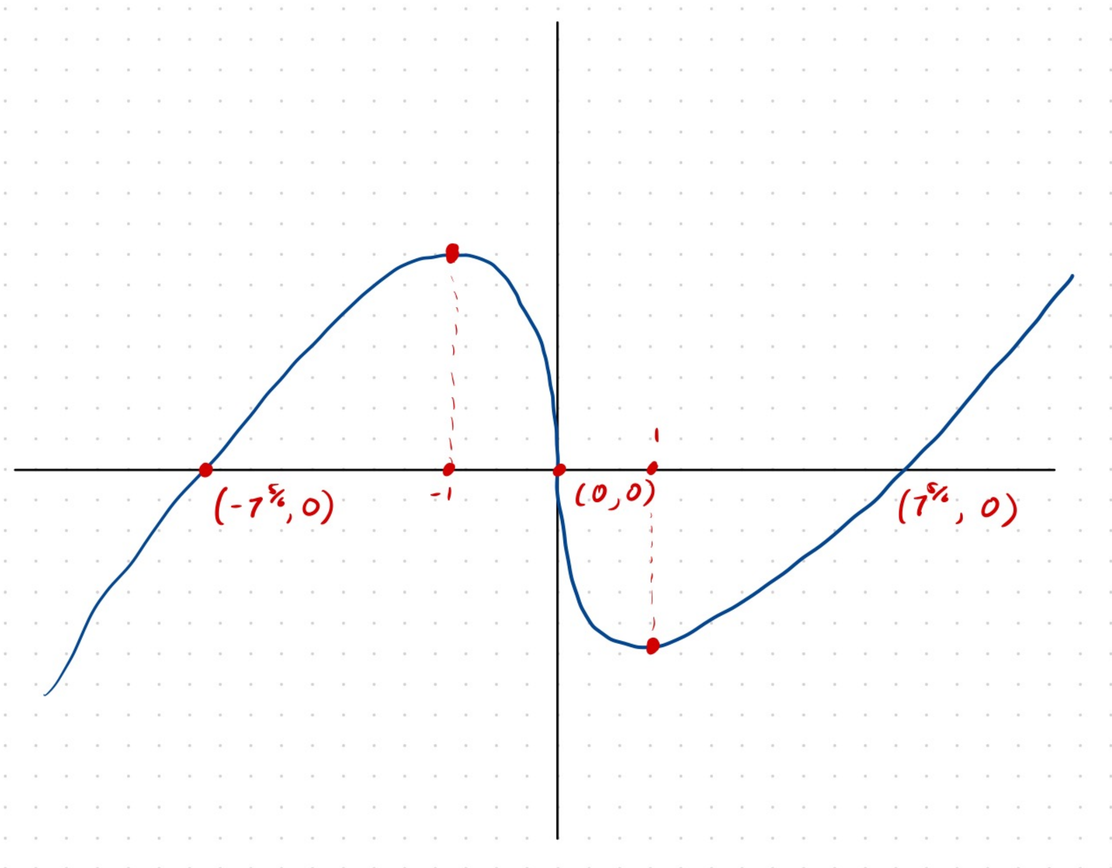
$$\begin{aligned} f(x) = \frac{5}{7}x^{7/5} - 5x^{1/5} &= 0 \\ 5x(\frac{1}{7}x^{2/5} - x^{-4/5}) &= 0 \implies x = 0 \\ \frac{1}{7}x^{2/5} &= x^{-4/5} \\ x^{6/5} = (x^{3/5})^2 &= 7 \\ x^{3/5} &= \pm\sqrt{7} \\ x &= \pm(\sqrt{7})^{5/3} \end{aligned}$$

$$\begin{aligned} f'(x) = x^{2/5} - x^{-4/5} &= 0 \\ x^{2/5} &= x^{-4/5} \\ x^{6/5} = (x^{3/5})^2 &= 1 \\ x^{3/5} &= \pm 1 \\ x &= \pm 1 \end{aligned}$$

Thus, f has roots at $\pm(\sqrt{7})^{5/3}$ and 0, as well as max/min points at ± 1.
Another thing to note is that $f'(x)$ is undefined at $x = 0$, so f has a vertical tangent line at $x = 0$.
Using f'' to determine concavity, we have:

$$f''(1) = \frac{2}{5}(1)^{-3/5} + \frac{4}{5}(1)^{-9/5} = \frac{6}{5} > 0$$
$$f''(-1) = \frac{2}{5}(-1)^{-3/5} + \frac{4}{5}(-1)^{-9/5} = -\frac{6}{5} < 0$$

So f is concave up at $x = 1$ and concave down at $x = -1$, so its maximum point is at $x = -1$ and its minimum point is at $x = 1$.
With all this information, we can then sketch the graph of f:



(-7^5/6, 0)
-1
(0, 0)
1
(7^5/6, 0)