Consider the function $f(x) = \frac{1}{3}x^3 + x^2 - 3x + 4$, with the domain $[0, 3]$.

1. Find all of the critical points of f in the interval $0 < x < 3$.

$$f'(x) = x^2 + 2x - 3 \overset{\text{set}}{=} 0 \qquad \text{The only such critical}$$
$$(x + 3)(x - 1) = 0 \qquad \text{point is } c = 1.$$
$$x = -3, \text{ or } x = 1$$

2. Evaluate f at its critical point(s) and the endpoints of its domain.

$$f(1) = \frac{1}{3} \cdot 1^3 + 1^2 - 3 \cdot 1 + 4 = \frac{1}{3} + 1 - 3 + 4 = 2 + \frac{1}{3} = 2.\overline{3}$$
$$f(0) = 4$$
$$f(3) = \frac{1}{3} \cdot 3^3 + 3^2 - 3 \cdot 3 + 4 = 3^2 + 3^2 - 3^2 + 4 = 9 + 4 = 13$$

3. What are the global maximum and minimum values of f?

f_{max} is the largest of $2.\overline{3}, 4,$ and 13.

f_{min} " " smallest of "

$\therefore \boxed{f_{max} = 13}$, and $\boxed{f_{min} = 2.\overline{3}}$