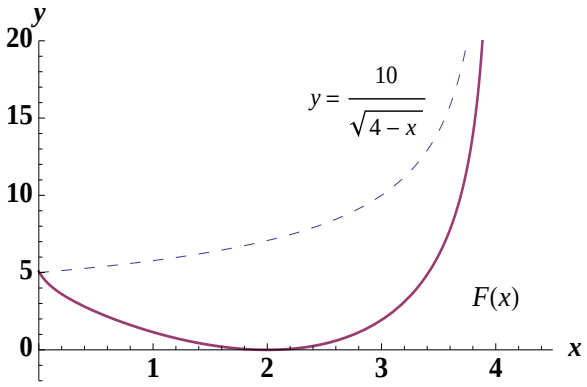
2. [12 points] The graph of $F(x)$ is given below. The function $F(x)$ is defined for $0 \leq x < 4$, and its graph is given below. As shown $F(x)$ has a vertical asymptote at $x = 4$. Let $G(x)$ be the antiderivative of $F(x)$ with $G(1) = 1$.



a. [2 points] For what values of x is $G(x)$ increasing?

b. [2 points] For what values of x is $G(x)$ concave up?

c. [2 points] Find a formula for $G(x)$ in terms of $F(x)$.

d. [4 points] Is $\int_0^4 \frac{10}{\sqrt{4-x}} dx$ convergent or divergent? If it is convergent, find its exact value.

e. [2 points] Does $\lim_{x \to 4^-} G(x)$ exist? Justify.