

1991 - BC 4

4. Let  $F(x) = \int_1^{2x} \sqrt{t^2 + t} dt$ .

(a) Find  $F'(x)$ .

(b) Find the domain of  $F$ .

(c) Find  $\lim_{x \rightarrow \frac{1}{2}} F(x)$ .

(d) Find the length of the curve  $y = F(x)$  for  $1 \leq x \leq 2$ .

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