1. **Find the derivative of**
   
   (a) \( f(x) = \sqrt{x^2 + 3x} \)
   
   Use the general power rule (or the Chain rule).

   (b) \( C(t) = \frac{t}{\sqrt{t^2 + 3t}} \)
   
   Use the quotient rule or write \( C(t) = t(t^2 + 3t)^{-1/2} \) and then use the product rule + the general power rule.

2. **Approximate the value of** \( \frac{1}{10.1} \) **using the method of approximation by increments.**

   Let \( f(x) = 1/x \). We would like to approximate the value of \( f(10.1) \).

   Since for small values of \( h \) we have
   
   \[ f(x + h) \approx f(x) + hf'(x), \]

   we may find the approximation by computing \( f(10) + (.1) \cdot f'(10) \).

   Since \( f'(x) = -x^{-2} \) we have \( f'(10) = -.01 \), consequently \( \frac{1}{10.1} \approx \frac{1}{10} + .1 \times (-.01) = .099 + .0009 = 0.099 \).

3. **Find the linear equation of the tangent of the curve given by** \( x^2 - y^2 = 3x + y \) **at the point** \( (0,0) \).

   The slope of the tangent to the curve at the point \( (0,0) \) is given by
   
   \[ m = \left. \frac{dy}{dx} \right|_{x=0,y=0}. \]

   We can obtain this slope by implicit differentiation. Recall that \( y \) is an implicit function \( y(x) \) so when we derive terms involving a functional composition of \( y(x) \) (in this case, the term \( y^2 \)) we have to use the Chain rule.
Deriving both sides yields
\[ 2x - 2yy' = 3 + y'. \]

Solving for \( y' = \frac{dy}{dx} \) we obtain
\[ \frac{dy}{dx} = y' = \frac{2x - 3}{2y + 1}. \]

Therefore
\[ m = \frac{dy}{dx} \bigg|_{x=0,y=0} = \frac{2(0) - 3}{2(0) + 1} = -3. \]

Since the tangent line contains the point \((0, 0)\) the line equation is simply
\[ y = -3x. \]