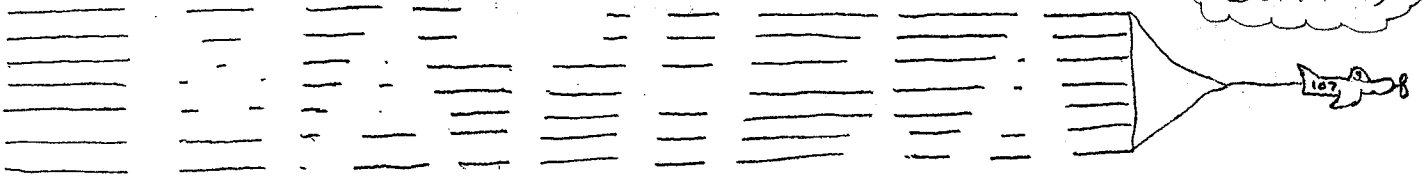
Solutions



(1) Use linear approximation to estimate $\sqrt[3]{8.12}$.

Let $f(x) = \sqrt[3]{x}$.

① Find eqn. of tangent line at $x = 8$:

point = $(8, 2)$. slope = $f'(8) = \frac{1}{3}(8)^{-2/3} = \frac{1}{12}$.

$y - 2 = \frac{1}{12}(x - 8)$.

② Plug in x-value: $x = 8.12$:

$y - 2 = \frac{1}{12}(8.12 - 8) = \frac{1}{12}(.12) = .01$

So $\boxed{y = 2.01}$

(2) Find a formula for the inverse of the function $y = \frac{x-2}{x-1}$.

① switch x + y: $x = \frac{y-2}{y-1}$.

② solve for y:

$x(y-1) = y - 2$

$xy - x = y - 2$

$xy - y = x - 2$

$y(x-1) = x - 2$

$\boxed{y = \frac{x-2}{x-1}}$