

$$f \circ f^{-1}(y) = y$$

$$f(x) = \frac{2}{3}x + 1$$

So:

$$f(f^{-1}(y)) = \frac{2}{3}f^{-1}(y) + 1 = y$$

$$\frac{2}{3}f^{-1}(y) = y - 1$$

$$\frac{3}{2} \cdot \frac{2}{3} f^{-1}(y) = \frac{3}{2} (y - 1)$$

$$\boxed{f^{-1}(y) = \frac{3}{2}(y - 1)}$$