

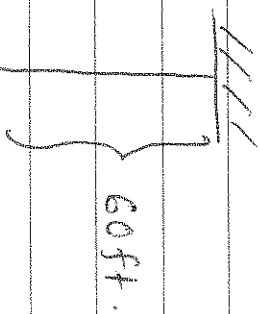
Quiz - 2 :

1. (a)

Work_{N1} = Force × distance.

$$= 7 \times 60$$

$$= \boxed{420 \text{ ft-lb}}$$



(b) weight of the small portion of the chain

$$= 1 \times 4x \text{ lb}$$

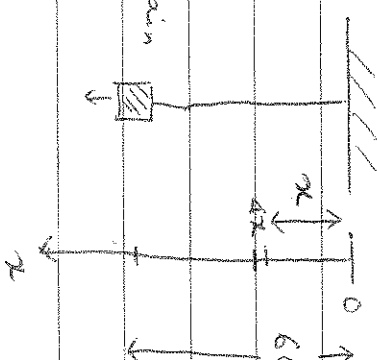
So, the work done by raising the small portion

$$= 4x \text{ ft-lb}$$

Total amount of work by raising the whole chain

$$W_2 = \int_0^{60} 4x \, dx = \frac{1}{2} \times 60^2$$

$$= 1800 \text{ ft-lb}$$



Total work (new ~~sed~~) = $W_1 + W_2 = \boxed{2220 \text{ ft-lb}}$

2. $y = \frac{x+1}{x+2} \Rightarrow y(x+2) = x+1$

$$\Rightarrow xy - x = 1 - 2y$$

$$\Rightarrow x(y-1) = 1-2y \Rightarrow x = \frac{1-2y}{y-1}$$

So, $f^{-1}(x) = \frac{2x-1}{x-1}, x \neq 1$

Domain of $f^{-1} \equiv \mathbb{R} - \{1\}$ or ~~the set~~ all real numbers except.

Range of $f^{-1} \equiv$ Domain of $f = \mathbb{R} - \{2\}$, or all " " except