The hermit's maximization problem

man-hours enjoyed as leisure time

$U(h,x) = \log h + \log x$

potatoes

$x(24-h) =$

$\Rightarrow U(h) =$

time spent working cannot be enjoyed as leisure time

$U(h,x) = \log(2\overset{4}{\cancel{5}}-h) + \log(x \cancel{4})$

potatoes

$x(h) = \cancel{16(h-3)}$

land, constant

$x(h) = A(h-h_o)^\alpha L^\beta = k(h-h_o)^\alpha$

$L = AL^\beta$

obviously irrelevant

$\Rightarrow U(h) = \log(24-h) + \log(k(h-h_o)^\alpha) = \log(24-h) + \log k + \alpha\log(h-h_o)$

$\dfrac{dU(h)}{dh} = -\dfrac{1}{24-h} + \dfrac{+\alpha}{h-h_o} = 0$

$\Rightarrow \dfrac{\alpha}{h-h_o} = \dfrac{1}{24-h} \quad \Rightarrow (24-h)\alpha = h-h_o$

$\Rightarrow 24\alpha + h_o = h(1+\alpha) \quad \Rightarrow h = \dfrac{24\alpha + h_o}{1+\alpha}$

$\Rightarrow$ for $h_o = 0$ and $\alpha = 1$, both work and leisure are equally weighted

$L = 12 \qquad L = 12$