The following formulas might be useful on this exam.

$b^r b^s = b^{r+s}$ $\quad (b^r)^s = b^{rs}$ $\quad b^r/b^s = b^{r-s}$ $\quad b^{-r} = 1/b^r$

$a_{n+1} = a_n + d$ $\quad a_{n+1} = a_n + d + en$ $\quad a_{n+1} = ra_n$ $\quad a_{n+1} = ra_n + d$

$a_n = a_0 + dn$ $\quad a_n = a_0 + dn + e\left(\frac{(n-1)n}{2}\right)$ $\quad a_n = a_0 r^n$ $\quad a_n = a_0 r^n + d\left(\frac{1-r^n}{1-r}\right) = a_0 r^n + d\left(\frac{r^n-1}{r-1}\right)$

$a_n = E + (a_0 - E)r^n$ where $E = \frac{d}{1-r}$

$y = mx + b$ $\quad y - y_0 = m(x - x_0)$ $\quad \frac{x}{a} + \frac{y}{b} = 1$ $\quad e = 1 + 1 + \frac{1}{2} + \frac{1}{2\cdot 3} + \frac{1}{2\cdot 3\cdot 4} + \cdots$

$m = \frac{\text{rise}}{\text{run}}$ $\quad \frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $\quad \frac{-b}{2a}$ $\quad 1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}$

$a(t) = a_0 r^{t/d}$ $\quad b^x = c$ if $x = \frac{\log c}{\log b} = \frac{\ln c}{\ln b}$ $\quad b = e^{\ln b} = 10^{\log b}$ $\quad 1 + r + r^2 + \cdots + r^n = \left(\frac{1-r^{n+1}}{1-r}\right) = \left(\frac{r^{n+1}-1}{r-1}\right)$

$a_{n+1} = m(L - a_n)a_n$

a_n remains between 0 and L if $mL < 4$ $\quad$ a_n will go to 0 if $0 \leq mL \leq 1$ $\quad$ a_n levels off at $L - \frac{1}{m}$ if $1 < mL \leq 3$

$p_{n+1} = \frac{p_n}{mp_n + b}$ $\quad p_n = \frac{A}{1+Bb^n}$ where $A = \frac{1-b}{m}$ and $B = \frac{A}{p_0} - 1$