

$$t_1 = 10$$

$$t_r = a_1 + r d = 10 + r d = 41$$

$$r d = 31 \quad d = 7$$

Ⓟ ✓

$$a_n = a_1 + (n-1)d$$

$$a_n = 10 + (n-1)7 = 7n - 6$$

$$(n-1)7 = 31$$

$$n-1 = 4 \quad n = 5$$

$$1.1, 1.8, 1.5, \dots, 99.9$$

$$\frac{1 \times 1 \times 9 + 1}{99} = 1.1$$

$$\frac{1 \times 1 \times 9 + 1}{99} = 99.9$$

$$1.1 \leq 99.9 \leq 99.9$$

$$\frac{99.9 - 1.1}{9} + 1 = 12$$

Ⓟ ✓

$$a_{n+1} + a_{n+r} + a_{n+r} = -4n + 12$$

$$a_1 + nd + a_1 + (n+1)d + a_1 + (n+1)d = -4n + 12$$

$$3a_1 + 3nd + 2d = -4n + 12$$

$$3nd = -4n \quad d = -\frac{4}{3}$$

Ⓟ ✓

$$3a_1 = 12 \quad a_1 = 4$$

$$a_{12} + a_1 = a_1 + 11d + a_1 + d = 2a_1 + 12d$$

$$12 - 4 = -12$$

$$a_{12} - a_1 = a_1 - a_{12}$$

$$12a_1 = a_{12} + a_{12}$$

$$r(r^{x+1}) = (r^{r^x} - r) + (r^x - 1)$$

$$r^{x+1} = r^{r^x} - r + r^x - 1 \quad \xrightarrow{r^x = t} \quad rt = rt - r + t - 1 = rt - r \quad t = r \quad r^x = r \quad x = 1$$

$$a_r = r^r - 1 = r - 1 = 0$$

$$a_1 = r^{r+1} = r^2 = 1$$

$$a_{12} = r^r - r = 1 - 1 = 0$$

$$1 + 1 + 1 = 3$$

Ⓟ ✓

$$a_{12} - a_{10} = 0$$

$$a_{12} + a_{10} = 20$$

$$2a_{12} = 20$$

$$\begin{cases} a_{12} = 10 = a_1 + 11d \\ a_{10} = 10 = a_1 + 9d \end{cases}$$

$$\begin{aligned} 0 &= 2d \\ d &= \frac{0}{2} \end{aligned}$$

Ⓟ ✓

$$a_{11} = a_{12} + d = 10 + \frac{0}{2}$$

$$\frac{10 + 0}{2} = \frac{10}{2} = 5$$

(d)

$$d) S_d = \frac{\partial}{\partial r} (a_1 + a_d) = \frac{\partial}{\partial r} (ra_1 + rd) = a_1 + rd \quad (9)$$

$$r) a_1 + 2d + a_1 + 4d + a_1 + 6d + a_1 + 8d + a_1 + 10d = 5a_1 + 50d = 5(a_1 + 10d)$$

$$\phi(a_1 + rd) = \phi(a_1 + vd) \times \frac{1}{r}$$

$$a_1 + rd = \frac{1}{r} a_1 + \frac{v}{r} d \rightarrow \frac{r}{r} a_1 = \frac{v}{r} d - \frac{1}{r} d = \frac{1}{r} d \rightarrow a_1 = \frac{1}{r} d \times \frac{r}{1} = \frac{1}{1} d$$

$$\frac{a_r}{a_1} = \frac{a_1 + d}{a_1} = \frac{r}{1} d \times rd = r \text{ plp}$$

(r) ✓

$$t_n = t_{n-1} + 10$$

$$t_1 + (n-1)d = t_1 + (n-5)d + 10$$

$$(n-1)d - (n-5)d = 10$$

$$rd = 10 \quad d = 2$$

$$t_5 = t_1 + 4d = t_1 + 8$$

$$t_v = t_1 + 4d = t_1 + 8$$

$$t_9 = t_1 + 8d = t_1 + 16$$

(r) ✓

$$\frac{(t_9 - t_5)(t_9 + t_5)}{t_v} = \frac{16 \times 24}{8} = \frac{16 \times 6}{1} = 96 \text{ plp}$$

$$d = \frac{r + \sqrt{r} - r(1 - 4\sqrt{r})}{1r} = \frac{r + \sqrt{r} - r + 4r\sqrt{r}}{1r} = \frac{1r\sqrt{r}}{1r} = \sqrt{r} \quad (1)$$

(r) ✓

$$(uz)_{100} \quad (rn - r) + r = rn - 1 \quad (9)$$

$$d = \frac{100 - r}{(rn - 1) - 1} = \frac{r}{rn - r} = \frac{10}{rn - 1}$$

$$a_{n+1} = a_1 + (n+1-1)d = 11$$

$$r + nd = 11$$

$$n \times \frac{10}{rn - 1} = 9$$

$$10n = 11n - 9$$

$$rn = 9 \quad n = 9$$

(r) ✓

$$a_n + a_{n+r} = a_r + a_{1r}$$

$$a_1 + (n-1)d + a_1 + (n+r)d = a_1 + rd + a_1 + 14d$$

$$ra_1 + (rn+r)d = ra_1 + 14d$$

$$rn + r = 14$$

$$rn = 14$$

$$n = 1$$

$$a_n = ra_r$$

(r) ✓

$$a_1 + vd = r(a_1 + rd)$$

$$a_1 + vd = ra_1 + rd$$

$$-rd = ra_1$$

$$a_1 = -d$$

$$a_x = -d + (x-1)d = 0$$

$$-d + xd - d = 0$$

$$-rd + xd = 0$$

$$d(x-r) = 0$$

$$x = r$$