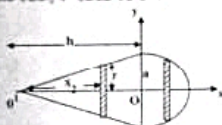


— ୧୨୩/୧୪ ମାସିନି ଅଧ୍ୟାପକମାନଙ୍କ

—အချင်း စာမေးပွဲ အောင်ရမည်

සලකා ගනිමින් සලකා බැලීමට කළු $x > 2a$ විය යුතුය.
එහි ප්‍රමාණ $\frac{1}{30} (1 + 6a) > 2a$ විය යුතුය.
 $1 + 6a > 12a$
 $1 > 6a$
 $a < \frac{1}{6}$ විය යුතුය.
 $a = \frac{1}{6}$ කළු සලකා ගනිමින් සලකා බැලීමට.

07. සම්පූර්ණයෙන්ම වටය වෙනස් හා වෙනස්
වස්තූන් අතර x - වක්‍රය මත පිහිටයි.



(i) කළු අවට සමතුලිත සලකුණු y වක්‍රයේ සිට x_1 දිගේ දි
සමතුලිත δx_1 දිගේ කැපීමක් සලකමු.
එහි වර්ගය $= \pi a^2 - \pi x_1^2$ වේ.
කළු වක්‍රයේ කැපී ඇති දිගකින් සමතුලිත p යන වස්තු
වර්ගය සමතුලිත වස්තුවක $= \pi a^2 - \pi x_1^2$ වේ.
කැපීමේ වස්තුවක වස්තුවක $= \pi x_1^2$ වේ.
 y වක්‍රයේ සිට x_1 දිගේ කැපීමක් සලකමු.

$$\bar{x} = \frac{\int_0^a \pi(a^2 - x^2) dx}{\int_0^a \pi(a^2 - x^2) dx + \int_0^a \pi x^2 dx}$$

$$= \frac{\pi \left[a^2 x - \frac{x^3}{3} \right]_0^a}{\pi \left[a^2 x - \frac{x^3}{3} \right]_0^a + \pi \left[\frac{x^3}{3} \right]_0^a}$$

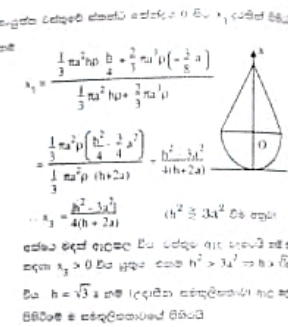
$$= \frac{\pi \left(a^3 - \frac{a^3}{3} \right)}{\pi \left(a^3 - \frac{a^3}{3} + \frac{a^3}{3} \right)} = \frac{\pi \left(\frac{2a^3}{3} \right)}{\pi a^3} = \frac{2}{3} a$$

(ii) කළු වස්තුව සලකමු. 0^1 සිට වක්‍රයේ වස්තුවක වස්තුවක
වස්තුවක $\bar{x}$ යන වස්තුවක 0^1 සිට x_2 දිගේ දි සමතුලිත δx_2
වස්තුවක කැපීමක් සලකමු. එහි වර්ගය πx_2^2 වේ.
වස්තුවක Δ වස්තුවකින් $\frac{x_2}{r} = \frac{h}{a} \Rightarrow r = \frac{ax_2}{h}$
වස්තුවක වස්තුවක $= \pi x_2^2$ වේ.

$$\bar{x} = \frac{\int_0^a \pi x^2 dx}{\int_0^a \pi x^2 dx + \int_0^a \pi(a^2 - x^2) dx}$$

$$= \frac{\pi \left[\frac{x^3}{3} \right]_0^a}{\pi \left[\frac{x^3}{3} \right]_0^a + \pi \left[a^2 x - \frac{x^3}{3} \right]_0^a}$$

$$= \frac{\pi \left(\frac{a^3}{3} \right)}{\pi \left(\frac{a^3}{3} + a^3 - \frac{a^3}{3} \right)} = \frac{\pi \left(\frac{a^3}{3} \right)}{\pi a^3} = \frac{1}{3} a$$



08. (a) x හා y ස්වයංසන්ධිත වීදුලික වස්තු $X \cup Y$ වේ.
(සමතුලිත අවස්ථාව) විය යුතුය.
 X හා Y අවස්ථාවක වස්තුවක වස්තුවක වීදුලික
වස්තුවක $P(X \cup Y) = P(X) + P(Y) = 1$ විය යුතුය.
 $X \cap Y = \emptyset$ (අවමාන වීදුලික) විය යුතුය.
වස්තු $P(X \cap Y) = P(\emptyset) = 0$ විය යුතුය.
 X හා Y වීදුලික වස්තුවක වීදුලික වස්තුවක
වීදුලික වීදුලික අවස්ථාවක වීදුලික වීදුලික වස්තුවක
වස්තුවක වස්තුවක වස්තුවක වස්තුවක වස්තුවක

වස්තු $P(X \cap Y) = P(X) \times P(Y)$
 A හා B සහ ස්වයංසන්ධිත වීදුලික වස්තුවක
අවස්ථාවක වස්තුවක වස්තුවක වීදුලික වීදුලික
 $P(A) + P(B) = 1$ වේ.
 $P(A \cap B) = 0$ වේ.
 $P(A) = \frac{2}{5}$ වේ. $P(B) = \frac{3}{5}$ වේ.
 A හා C ස්වයංසන්ධිත වීදුලික වීදුලික $P(C) = \frac{1}{2}$ වේ.

(i) $P(A \cap C) = P(A) \cdot P(C)$
 $= \frac{2}{5} \times \frac{1}{2} = \frac{1}{5}$

(ii) $P(A \cup C) = P(A) + P(C) - P(A \cap C)$
 $= \frac{2}{5} + \frac{1}{2} - \frac{1}{5} = \frac{3}{5}$

(iii) $P(A \cap \bar{C}) = 1 - P(A \cup C)$
 $= 1 - \frac{3}{5} = \frac{2}{5}$

(iv) $P(A) = \frac{2}{5}$ වේ. $P(\bar{A}) = 1 - \frac{2}{5} = \frac{3}{5}$ වේ.
 $P(C) = \frac{1}{2}$ වේ. $P(\bar{C}) = 1 - \frac{1}{2} = \frac{1}{2}$ වේ.

$P(\bar{A}) \cdot P(\bar{C}) = \frac{3}{5} \times \frac{1}{2} = \frac{3}{10} = P(\bar{A} \cap \bar{C})$ වීදුලික A හා C ද
ස්වයංසන්ධිත වේ.

$P(D) = \frac{1}{5}$ වේ. $P(\bar{D}) = 1 - P(D) = \frac{4}{5}$ වේ.
 B හා D අවස්ථාවක වස්තුවක වස්තුවක වීදුලික
 $P(B \cup D) = P(B) + P(D) = \frac{3}{5} + \frac{1}{5} = \frac{4}{5}$ වේ.
 $P(B \cap D) = \frac{1}{5} + \frac{1}{5} = \frac{2}{5}$ වේ.

$P(B \cup D) = P(B \cap D) + P(B \cap \bar{D}) + P(\bar{B} \cap D) + P(\bar{B} \cap \bar{D})$
 $P(B \cap D) = P(B \cap D) = 1 - P(B \cup D) = 1 - \frac{4}{5} = \frac{1}{5}$ වේ.
වීදුලික B හා D අවස්ථාවක වස්තුවක වස්තුවක වස්තුවක

Y වීදුලික වස්තුවක වස්තුවක වස්තුවක වස්තුවක
 L වස්තුවක වස්තුවක වස්තුවක වස්තුවක වස්තුවක
වස්තුවක වස්තුවක වස්තුවක වස්තුවක වස්තුවක

$P(C) = \frac{1}{10}$. $P(B) = \frac{2}{5}$. $P(T) = \frac{1}{2}$
 $P(LC) = \frac{1}{5}$. $P(LB) = \frac{1}{2}$. $P(LT) = \frac{1}{10}$ වේ. $\frac{1}{10}$ වේ. $\frac{1}{10}$ වේ.

$P(TL) = \frac{P(LT) + P(TL)}{P(LC) + P(LB) + P(LT) + P(TL)}$
 $= \frac{\frac{1}{10} + \frac{1}{10}}{\frac{1}{5} + \frac{2}{5} + \frac{1}{10} + \frac{1}{10}} = \frac{\frac{2}{10}}{\frac{4}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{8}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{16}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{32}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{64}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{128}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{256}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{512}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1024}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2048}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4096}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{8192}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{16384}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{32768}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{65536}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{131072}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{262144}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{524288}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1048576}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2097152}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4194304}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{8388608}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{16777216}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{33554432}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{67108864}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{134217728}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{268435456}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{536870912}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1073741824}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2147483648}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4294967296}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{8589934592}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{17179869184}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{34359738368}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{68719476736}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{137438953472}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{274877906944}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{549755813888}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1099511627776}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2199023255552}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4398046511104}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{8796093022208}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{17592186044416}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{35184372088832}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{70368744177664}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{140737488355328}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{281474976710656}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{562949953421312}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1125899906842624}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2251799813685248}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4503599627370496}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{9007199254740992}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{18014398509481984}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{36028797018963968}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{72057594037927936}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{144115188075855872}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{288230376151711744}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{576460752303423488}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1152921504606846976}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2305843009213693952}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4611686018427387904}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{9223372036854775808}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{18446744073709551616}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{36893488147419103232}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{73786976294838206464}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{147573952589676412928}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{295147905179352825856}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{590295810358705651712}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1180591620717411303424}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2361183241434822606848}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4722366482869645213696}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{9444732965739290427392}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{18889465931478580854784}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{37778931862957161709568}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{75557863725914323419136}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{151115727451828646838272}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{302231454903657293676544}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{604462909807314587353088}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1208925819614629174706176}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2417851639229258349412352}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4835703278458516698824704}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{9671406556917033397649408}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{19342813113834066795298816}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{38685626227668133590597632}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{77371252455336267181195264}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{154742504910672534362390528}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{309485009821345068724781056}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{618970019642690137449562112}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1237940039285380274899124224}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2475880078570760549798248448}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{4951760157141521099596496896}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{9903520314283042199192993792}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{19807040628566084398385987584}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{39614081257132168796771975168}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{79228162514264337593543950336}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{158456325028528675187087900672}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{316912650057057350374175801344}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{633825300114114700748351602688}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1267650600228229401496703205376}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2535301200456458802993406410752}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5070602400912917605986812821504}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{10141204801825835211973625643008}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{20282409603651670423947251286016}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{40564819207303340847894502572032}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{81129638414606681695789005144064}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{162259276829213363391578010288128}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{324518553658426726783156020576256}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{649037107316853453566312041152512}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1298074214633706907132624082305024}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2596148429267413814265248164610048}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5192296858534827628530496329220096}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{10384593717069655257060992658440192}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{20769187434139310514121985316880384}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{41538374868278621028243970633760768}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{83076749736557242056487941267521536}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{166153499473114484112975882535043072}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{332306998946228968225951765070086144}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{664613997892457936451903530140172288}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1329227995784915872903807060280344576}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2658455991569831745807614120560689152}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5316911983139663491615228241121378304}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{10633823966279326983230456482242756608}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{21267647932558653966460912964485513216}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{42535295865117307932921825928971026432}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{85070591730234615865843651857942052864}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{170141183460469231731687303715884105728}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{340282366920938463463374607431768211456}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{680564733841876926926749214863536422912}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1361129467683753853853498429727072845824}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2722258935367507707706996859454145691648}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5444517870735015415413993718908291383296}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{10889035741470030830827987437816582766592}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{21778071482940061661655974875633165533184}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{43556142965880123323311949751266331066368}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{87112285931760246646623899502532662132736}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{174224571863520493293247799005065324265472}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{348449143727040986586495598010130648530944}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{696898287454081973172991196020261297061888}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1393796574908163946345982392040522594123776}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2787593149816327892691964784081045188247552}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5575186299632655785383929568162090376495104}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{11150372599265311570767859136324180752990208}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{22300745198530623141535718272648361505980416}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{44601490397061246283071436545296723011960832}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{89202980794122492566142873090593446023921664}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{178405961588244985132285746181186892047843328}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{356811923176489970264571492362373784095686656}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{713623846352979940529142984724747568191373312}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1427247692705959881058285969449495136382746624}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2854495385411919762116571938898990272765493248}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5708990770823839524233143877797980545530986496}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{11417981541647679048466287755595961091061972992}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{22835963083295358096932575511191922182123945984}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{45671926166590716193865151022383844364247891968}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{91343852333181432387730302044767688728495783936}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{182687704666362864775460604089535377456991567872}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{365375409332725729550921208179070754913983135744}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{730750818665451459101842416358141509827966271488}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{1461501637330902918203684832716283019655932542976}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{2923003274661805836407369665432566039311865085952}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{5846006549323611672814739330865132078623730171904}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{11692013098647223345629478661730264157247460343808}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{23384026197294446691258957323460528314494920687616}{5} + \frac{2}{10}} = \frac{\frac{2}{10}}{\frac{46768052394588893382517914646921056628989841375232}{5} + \frac{2}{10}} = \$

$$\begin{aligned} (2x_1 + 3) + (2x_2 + 3) + \dots + (2x_n + 3) & \text{ සරල කර} \\ \text{සමස්ත } \mu &= \frac{1}{n} \sum_{i=1}^n (2x_i + 3) = \frac{1}{n} \sum_{i=1}^n 2x_i + \frac{1}{n} \sum_{i=1}^n 3 \\ &= 2 \cdot \frac{1}{n} \sum_{i=1}^n x_i + \frac{1}{n} \cdot 3n \\ &= 2\mu + 3 \end{aligned}$$

$$\begin{aligned} \text{වෙනස } \sigma^2 &= \frac{1}{n} \sum_{i=1}^n (2x_i + 3 - (2\mu + 3))^2 \\ &= \frac{1}{n} \sum_{i=1}^n (2x_i + 3 - 2\mu - 3)^2 \\ &= \frac{1}{n} \sum_{i=1}^n (2x_i - 2\mu)^2 = 4\sigma^2 \end{aligned}$$

එබැවින් අවසානය = 10

- (b) (i) 3, 6, 9, 12, 4, 6, 8, 10, 12, 14, x, y
 3, 4, 6, 6, 8, 9, 10, 12, 12, 14, x, y

$$\begin{aligned} \text{සමස්ත } &= \frac{3+4+6+6+8+9+10+12+12+14+x+y}{12} \\ &= \frac{84+x+y}{12} = 8 \text{ බැවින්} \\ x+y &= 12 \end{aligned}$$

එසේ 6 බැවින් x හෝ y අවම වශයෙන් 6 විය යුතුය.
 (∵ 12 යන අගයට අවම වශයෙන් 6 ක් 2 බැවින්)
 ∴ x = y = 6

- (ii) 3, 4, 6, 6, 6, 8, 9, 10, 12, 12, 14

$$\text{සමස්ත } = \frac{6 \cdot n}{2} = 7$$

අවම වශයෙන් අඩුම සංඛ්‍යාව 8 - k, 8, 8 + k වේ.

$$\text{අනෙක් සමස්ත } \frac{8-k+8+8+k}{3} = 8 \text{ වේ.}$$

මේ සමස්ත සමස්තය 8 වේ.
 මේ සමස්ත විචලනය 12 බැවින්

$$12 = \frac{1}{13} \sum_{i=1}^n (x_i - 8)^2$$

$$\begin{aligned} 180 &= (3-8)^2 + (4-8)^2 + 4(6-8)^2 + (8-8)^2 + (9-8)^2 \\ &+ (10-8)^2 + 2(12-8)^2 + (14-8)^2 + (8-k-8)^2 \\ &+ (8-k)^2 + (8+k-8)^2 \end{aligned}$$

$$180 = 25 + 16 + 16 + 0 + 1 + 4 + 32 + 36 + k^2 + 0 + k^2$$

$$180 = 2k^2 + 100$$

$$80 = 2k^2$$

$$k^2 = 40$$

$$k = \pm 2\sqrt{10}$$
