

**අනුකලනය - සම්මත ක්‍රම**

1.	<p>ආර්ය වරහස්පරාසය කිරීම.</p> <p>i. <math>\int 1/(x^2-4x+3) dx</math> ii. <math>\int 1/(x^2+2x-3) dx</math> iii. <math>\int 1/(x^2-x-2) dx</math> iv. <math>\int 1/(x^2-10x+25) dx</math> v. <math>\int 1/(x^2+2x+1) dx</math>                  vi. <math>\int 1/(x^2+4x+8) dx</math> vii. <math>\int 1/(4x^2-12x+9) dx</math> viii. <math>\int 1/(3x^2+12x+13) dx</math> ix. <math>\int 1/(x^2+4x+5) dx</math> x. <math>\int 1/(x^2+x-2) dx</math>                  xi. <math>\int 1/(4x^2+4x+3) dx</math> xii. <math>\int 1/(x^2-6x+10) dx</math> xiii. <math>\int 1/(5+4x-x^2) dx</math> xiv. <math>\int 1/(3x^2+4x+1) dx</math> xv. <math>\int 1/(x^2+x-6) dx</math>                  xvi. <math>\int 1/(x^2+x+1) dx</math> xvii. <math>\int 1/(4x^2-4x+17) dx</math> xviii. <math>\int (x^2+6x+1)^{-1} dx</math> xix. <math>\int (1-x-2x^2)^{-1} dx</math> xx. <math>\int 1/(3x^2+2x+1) dx</math>                  xxi. <math>\int_2^1 1/(x^2-4x+29) dx</math> xxii. <math>\int_5^{11} 1/(x^2-5x+6) dx</math> xxiii. <math>\int_0^5 1/(x^2+5x+6) dx</math> xxiv. <math>\int_5^{11} 4/(x^2-2x-3) dx</math>                  xxv. <math>\int_2^3 (x^2-4x+13)^{-1} dx</math></p>
2.	<p><math>\int f'(x)/f(x) dx = \ln  f(x)  + C</math> සත්‍ය බව. මෙහි C යනු අභිමත නියතයකි; <math>f'(x) = d[f(x)]/dx</math> වේ.</p> <p>i. <math>\int (2x+4)/(x^2+4x+3) dx</math> ii. <math>\int (x-2)/(x^2-4x+3) dx</math> iii. <math>\int (2x+4)/(x^2-4x+3) dx</math> iv. <math>\int x/(x^2+4x+3) dx</math>                  v. <math>\int (x+1)/(x^2+x+1) dx</math> vi. <math>\int (x-1)/(2x^2+3x-2) dx</math> vii. <math>\int (6x+7)/(3x^2+4x+1) dx</math> viii. <math>\int (x+1)/(x^2-3x+2) dx</math>                  ix. <math>\int (2x+1)/(x^2+2x-3) dx</math> x. <math>\int (1-x)/(4-3x-x^2) dx</math> xi. <math>\int x/(x^2-1) dx</math> xii. <math>\int x/(x^2+1) dx</math> xiii. <math>\int x/(x^2+2x) dx</math>                  xiv. <math>\int_0^1 (x+1)/(x^2+3) dx</math> xv. <math>\int_0^1 x/(x^2+2x+5) dx</math> xvi. <math>\int_2^3 (x+3)/(x^2+34x-4) dx</math> xvii. <math>\int_0^1 x^2/(x^3+1) dx</math>                  xviii. <math>\int \tan x dx</math> xix. <math>\int_0^{\pi/4} \tan x dx</math> xx. <math>\int \cot x dx</math> xxi. <math>\int \operatorname{cosec} x dx</math> xxii. <math>\int \sec x dx</math>                  xxiii. <math>\int \sin 2x/(1+\sin^2 x) dx</math> xxiv. <math>\int e^y/(1+e^y) dx</math> xxv. <math>\int 1/x \ln x  dx</math></p>
3.	<p>ආර්ය වරහස්පරාසය ඉවත් වන සේ ආරද්‍ය බව.</p> <p><math>\int 1/\sqrt{x^2-a^2} dx \rightarrow x = a \sec \theta</math> ආරද්‍යය <math>\int 1/\sqrt{x^2+a^2} dx \rightarrow x = a \tan \theta</math> ආරද්‍යය <math>\int 1/\sqrt{a^2-x^2} dx \rightarrow x = a \sin \theta</math> ආරද්‍යය</p> <p>i. <math>\int 1/\sqrt{x^2-1} dx</math> ii. <math>\int 1/\sqrt{x^2-2} dx</math> iii. <math>\int 1/\sqrt{x^2-25} dx</math> iv. <math>\int 1/\sqrt{x^2-3} dx</math> v. <math>\int 1/\sqrt{a^2x^2-b^2} dx</math>                  vi. <math>\int 1/\sqrt{x^2+1} dx</math> vii. <math>\int 1/\sqrt{x^2+2} dx</math> viii. <math>\int 1/\sqrt{x^2+4} dx</math> ix. <math>\int 1/\sqrt{3x^2+2} dx</math> x. <math>\int 1/\sqrt{a^2x^2+b^2} dx</math>                  xi. <math>\int 1/\sqrt{1-x^2} dx</math> xii. <math>\int 1/\sqrt{4-x^2} dx</math> xiii. <math>\int 1/\sqrt{2-x^2} dx</math> xiv. <math>\int 1/\sqrt{9-4x^2} dx</math> xv. <math>\int 1/\sqrt{b^2-a^2x^2} dx</math>                  xvi. <math>\int_5^1 1/\sqrt{x^2-25} dx</math> xvii. <math>\int_{\sqrt{3}}^2 1/\sqrt{x^2-3} dx</math> xviii. <math>\int_0^3 1/\sqrt{x^2+9} dx</math> xix. <math>\int_0^1 1/\sqrt{x^2+1} dx</math> xx. <math>\int_0^a 1/\sqrt{a^2-x^2} dx</math>                  xxi. <math>\int_0^{\sqrt{3}} 1/\sqrt{3-x^2} dx</math> xxii. <math>\int_0^2 1/\sqrt{16-x^2} dx</math> xxiii. <math>\int_2^{\sqrt{2}} 1/\sqrt{x^2-2} dx</math> xxiv. <math>\int_1^3 1/\sqrt{x^2+3} dx</math>                  xxv. <math>\int_{0.25}^{0.5} 1/\sqrt{1-4x^2} dx</math></p>
4.	<p>වරහස්පරාසය කිරීම; ආර්ය වරහස්පරාසය ඉවත් වන සේ ආරද්‍ය බව.</p> <p>i. <math>\int 1/\sqrt{x^2+4x+3} dx</math> ii. <math>\int 1/\sqrt{x^2+2x+2} dx</math> iii. <math>\int 1/\sqrt{x^2+2x-3} dx</math> iv. <math>\int 1/\sqrt{4x^2+12x+13} dx</math> v. <math>\int 1/\sqrt{x^2+x+1} dx</math>                  vi. <math>\int 1/\sqrt{x^2-2x-1} dx</math> vii. <math>\int 1/\sqrt{x^2-6x+5} dx</math> viii. <math>\int 1/\sqrt{x^2+3x+2} dx</math> ix. <math>\int 1/\sqrt{-x^2+2x+1} dx</math> x. <math>\int 1/\sqrt{x^2+x-2} dx</math>                  xi. <math>\int 1/\sqrt{4x^2+4x+1} dx</math> xii. <math>\int 1/\sqrt{-x^2+6x-8} dx</math> xiii. <math>\int 1/\sqrt{-x^2+4x-3} dx</math> xiv. <math>\int 1/\sqrt{x^2+4x} dx</math> xv. <math>\int 1/\sqrt{-x^2+2x} dx</math>                  xvi. <math>\int 1/\sqrt{3x^2-2x-1} dx</math> xvii. <math>\int 1/\sqrt{x^2+2ax-3a^2} dx</math> xviii. <math>\int 1/\sqrt{5+4x-x^2} dx</math> xix. <math>\int 1/\sqrt{x^2-2ax} dx</math>                  xx. <math>\int 1/\sqrt{2x-x^2} dx</math> xxi. <math>\int_0^3 1/\sqrt{4-(x-1)^2} dx</math> xxii. <math>\int_0^1 1/\sqrt{1+6x-3x^2} dx</math> xxiii. <math>\int_0^1 1/\sqrt{2x-x^2} dx</math>                  xxiv. <math>\int_2^4 1/\sqrt{12+4x-x^2} dx</math> xxv. <math>\int_0^1 1/\sqrt{x^2+4x+5} dx</math></p>
5.	<p><math>\int f'(x)/2\sqrt{f(x)} dx = \sqrt{f(x)} + C</math> සත්‍ය බව. මෙහි C යනු අභිමත නියතයකි; <math>f'(x) = d[f(x)]/dx</math> වේ.</p> <p>i. <math>\int (2x+3)/\sqrt{x^2+3x-4} dx</math> ii. <math>\int (2x+1)/\sqrt{x^2+2x-3} dx</math> iii. <math>\int (3x+4)/\sqrt{4x^2+4x-1} dx</math> iv. <math>\int (x+3)/\sqrt{-x^2-6x-5} dx</math>                  v. <math>\int x/\sqrt{x^2-a^2} dx</math> vi. <math>\int (x+a)/\sqrt{x^2+a^2} dx</math> vii. <math>\int (2x-1)/\sqrt{4x^2+4x+3} dx</math> viii. <math>\int (2-x)/\sqrt{5+4x-x^2} dx</math>                  ix. <math>\int (2x+1)/\sqrt{x^2+x-3} dx</math> x. <math>\int (2x+3)/\sqrt{3x^2+6x+4} dx</math> xi. <math>\int (3x+2)/\sqrt{3x^2+2x-1} dx</math> xii. <math>\int (2x-1)/\sqrt{1-x^2} dx</math>                  xiii. <math>\int_0^1 x/\sqrt{1+x^2} dx</math> xiv. <math>\int_0^{2a} x/\sqrt{2ax-x^2} dx</math> xv. <math>\int_0^a x/\sqrt{4+x^2} dx</math> xvi. <math>\int_0^a x/\sqrt{2ax+x^2} dx</math>                  xvii. <math>\int \sin 2x/\sqrt{1+\sin x} dx</math> xviii. <math>\int e^y/\sqrt{e^y+1} dx</math> xix. <math>\int x/\sqrt{ax^2+b} dx</math> xx. <math>\int \cos x/\sqrt{a \sin x+b} dx</math></p>
6.	<p>කොටස් වශයෙන් අනුකලනය කිරීම.</p> <p><math>\int u (dv/dx) dx = u \cdot v - \int v (du/dx) dx</math> සත්‍ය බව. මෙහි u සහ v යනු x හි අවකලන ශ්‍රිත වේ.</p> <p>i. <math>\int x \sin x dx</math> ii. <math>\int e^x \cos x dx</math> iii. <math>\int (x^2+x) e^{2x} dx</math> iv. <math>\int \ln x  dx</math> v. <math>\int x \ln x  dx</math> vi. <math>\int x^2 \sin x dx</math>                  vii. <math>\int e^{ax} \sin bx dx</math> viii. <math>\int x \ln 2x  dx</math> ix. <math>\int [\ln x ]^2 dx</math> x. <math>\int x^3 e^{2x} dx</math> xi. <math>\int \tan^{-1} x dx</math> xii. <math>\int \sin^{-1} x dx</math>                  xiii. <math>\int x \tan^2 x dx</math> xiv. <math>\int x \sec^2 x dx</math> xv. <math>\int \sec^3 x dx</math> xvi. <math>\int_0^1 x \tan^{-1} x dx</math> xvii. <math>\int_0^{\pi} e^{-x} \sin x dx</math>                  xviii. <math>\int_0^1 (1+x+x^2) \ln x  dx</math> xix. <math>\int_0^{\pi} e^{2x} \sin 3x dx</math> xx. <math>\int_1^e [\ln x ]^3 dx</math> xxi. <math>\int_0^{1/4} x^{-1/2} \cos x^{1/2} dx</math>                  xxii. <math>\int_0^{\pi/4} x \sin x \cos x dx</math> xxiii. <math>\int_0^{\pi/2} x^2 \cos 3x dx</math> xxiv. <math>\int_1^2 \sqrt{x} \ln x  dx</math> xxv. <math>\int_0^{\pi/4} \tan^3 x dx</math>                  xxvi. <math>\int \operatorname{cosec}^3 x dx</math> xxvii. <math>\int \cos(\ln x ) dx</math></p>
7.	<p>වරහස්පරාසය ඉවත් වන සේ ආරද්‍ය බව.</p> <p><math>\int 1/\sqrt{x^2-a^2} dx \rightarrow x = a \sec \theta</math> ආරද්‍යය <math>\int 1/\sqrt{x^2+a^2} dx \rightarrow x = a \tan \theta</math> ආරද්‍යය <math>\int 1/\sqrt{a^2-x^2} dx \rightarrow x = a \sin \theta</math> ආරද්‍යය</p> <p>i. <math>\int \sqrt{x^2-1} dx</math> ii. <math>\int \sqrt{x^2-4} dx</math> iii. <math>\int \sqrt{4x^2-9} dx</math> iv. <math>\int \sqrt{25x^2-1} dx</math> v. <math>\int \sqrt{a^2x^2-b^2} dx</math> vi. <math>\int \sqrt{x^2-2} dx</math>                  vii. <math>\int \sqrt{x^2+1} dx</math> viii. <math>\int \sqrt{x^2+3} dx</math> ix. <math>\int \sqrt{x^2+4} dx</math> x. <math>\int \sqrt{2x^2+1} dx</math> xi. <math>\int \sqrt{9x^2+4} dx</math> xii. <math>\int \sqrt{a^2x^2+b^2} dx</math>                  xiii. <math>\int \sqrt{1-x^2} dx</math> xiv. <math>\int (3-x^2)^{1/2} dx</math> xv. <math>\int \sqrt{16-x^2} dx</math> xvi. <math>\int \sqrt{1-9x^2} dx</math> xvii. <math>\int \sqrt{b^2-a^2x^2} dx</math>                  xviii. <math>\int_0^1 \sqrt{x^2-1} dx</math> xix. <math>\int_0^a \sqrt{x^2-a^2} dx</math> xx. <math>\int_2^{1.5} \sqrt{9-x^2} dx</math> xxi. <math>\int_2^4 \sqrt{16-x^2} dx</math> xxii. <math>\int_0^{1/\sqrt{2}} \sqrt{1-x^2} dx</math>                  xxiii. <math>\int_{-\sqrt{2}}^{\sqrt{2}} \sqrt{x^2+2} dx</math> xxiv. <math>\int_1^{\sqrt{3}} \sqrt{x^2+3} dx</math> xxv. <math>\int_a^a \sqrt{a^2-x^2} dx</math></p>

8.	<p>වරලඳුරණය කිරීම; වරලඳුරණය ඉවත් වන සේ ආරඳුණ භාවිතය.</p> <p>i. <math>\int \sqrt{x^2+4x+3} dx</math> ii. <math>\int \sqrt{x^2-2x-5} dx</math> iii. <math>\int \sqrt{x^2+2x-2} dx</math> iv. <math>\int \sqrt{4x^2+12x+7} dx</math> v. <math>\int \sqrt{x^2-6x-3} dx</math>  vi. <math>\int \sqrt{x^2+2x+1} dx</math> vii. <math>\int \sqrt{x^2+2x+2} dx</math> viii. <math>\int \sqrt{x^2+6x+9} dx</math> ix. <math>\int \sqrt{4x^2+4x+3} dx</math> x. <math>\int \sqrt{x^2-8x+20} dx</math>  xi. <math>\int \sqrt{-x^2+2x} dx</math> xii. <math>\int \sqrt{-x^2+2x+2} dx</math> xiii. <math>\int \sqrt{-x^2+4x-4} dx</math> xiv. <math>\int \sqrt{-x^2+6x+16} dx</math> xv. <math>\int \sqrt{1+6x-3x^2} dx</math>  xvi. <math>\int \sqrt{3x^2+2x-1} dx</math> xvii. <math>\int \sqrt{x^2-2x} dx</math> xviii. <math>\int \sqrt{-x^2+2x+3} dx</math> xix. <math>\int \sqrt{2+x-x^2} dx</math> xx. <math>\int \sqrt{x^2+2x-99} dx</math></p>
9.	<p><math>\int 3f'(x) \sqrt{f(x)}/2 dx = [f(x)]^{3/2} + C</math> ඉලඳුණ භාවිතය. මෙහි C යනු අභිමත නියතයකි; <math>f'(x) = d[f(x)]/dx</math> වේ.</p> <p>i. <math>\int (2x+3) \sqrt{x^2+3x-2} dx</math> ii. <math>\int (x+2) \sqrt{x^2+4x-5} dx</math> iii. <math>\int (x-1) \sqrt{x^2-2x-3} dx</math> iv. <math>\int x \sqrt{x^2+2x+2} dx</math>  v. <math>\int (x+2) \sqrt{x^2+4x+5} dx</math> vi. <math>\int (1+x) \sqrt{x^2+2x+3} dx</math> vii. <math>\int (x-2) \sqrt{-x^2+4x+5} dx</math> viii. <math>\int (x-1) \sqrt{-x^2+2x+3} dx</math>  ix. <math>\int x \sqrt{x^2+4} dx</math> x. <math>\int x \sqrt{x^2-a^2} dx</math> xi. <math>\int (a+x) \sqrt{x^2+a^2} dx</math> xii. <math>\int (a-x) \sqrt{a^2-x^2} dx</math> xiii. <math>\int x \sqrt{1-3x^2} dx</math>  xiv. <math>\int x^2 \sqrt{9-4x^2} dx</math> xv. <math>\int x \sqrt{5-4x^2} dx</math> xvi. <math>\int e^x \sqrt{1+e^x} dx</math> xvii. <math>\int \sqrt{x} \sqrt{1+x^{3/2}} dx</math>  xviii. <math>\int \sin 2x \sqrt{1+\sin^2 x} dx</math> xix. <math>\int_0^1 x \sqrt{x^2+1} dx</math> xx. <math>\int_0^{1/\sqrt{2}} 3x \sqrt{1-2x^2} dx</math></p>
10.	<p><math>t = \tan(x/2)</math> ආරඳුණ භාවිතය.</p> <p>i. <math>\int 1/(1-\cos x) dx</math> ii. <math>\int 1/(1+\sin x) dx</math> iii. <math>\int 1/(1-\sin x) dx</math> iv. <math>\int 1/(4+5\cos x) dx</math> v. <math>\int 1/(3+2\sin x) dx</math>  vi. <math>\int 1/(3+\cos x) dx</math> vii. <math>\int 1/(13+5\sin x) dx</math> viii. <math>\int 1/(\cos x + \sin x) dx</math> ix. <math>\int 1/(1+\cos x + \sin x) dx</math>  x. <math>\int 1/(\cos x + 2\sin x + 3) dx</math> xi. <math>\int 1/(3+2\sin x - \cos x) dx</math> xii. <math>\int 1/(4\cos x + 3\sin x + 5) dx</math>  xiii. <math>\int 1/(3+\sin x + 2\cos x) dx</math> xiv. <math>\int_0^{\pi/2} 1/(2+\cos x) dx</math> xv. <math>\int_0^{\pi/2} 1/(5-4\cos x) dx</math>  xvi. <math>\int_0^{\pi/2} 1/(2+3\cos x) dx</math> xvii. <math>\int_0^{\pi/2} 1/(5-3\cos x) dx</math> xviii. <math>\int_0^{\pi/2} 1/(1+\cos x) dx</math>  xix. <math>\int_0^{\pi/2} 1/(3\cos x + 4\sin x) dx</math> xx. <math>\int_0^{\pi/4} 1/(\sin x - \cos x + 1) dx</math> xxi. <math>\int_0^{\pi/2} 1/(3\cos x - 4\sin x + 5) dx</math>  xxii. <math>\int_0^{\pi/2} 1/(3\cos x + 4\sin x + 5) dx</math> xxiii. <math>\int_0^{\pi/4} 1/(3\cos 2x + 4\sin 2x) dx</math>; (<math>t = \tan x</math> ආරඳුණ)  xxiv. <math>\int_0^{\pi/4} 1/(3+4\cos^2 x + \sin^2 x) dx</math>; (<math>t = \tan x</math> ආරඳුණ) xxv. <math>\int_0^{\pi/4} 1/(4\cos^2 x - 9\sin^2 x) dx</math>; (<math>t = \tan x</math> ආරඳුණ)</p>
11.	<p>මෙය <math>\equiv \lambda</math> (ඊරය) + <math>\mu</math> (ඊරයේ අවකලනය) + <math>\gamma</math> වන සේ <math>\lambda</math>, <math>\mu</math> හා <math>\gamma</math> නියත සොයන්න.</p> <p>i. <math>\int (1+\sin x)/(\cos x - \sin x) dx</math> ii. <math>\int 2 \sin x/(\cos x + \sin x) dx</math> iii. <math>\int (\cos x + 2 \sin x)/(\cos x - \sin x) dx</math>  iv. <math>\int \cos x/(\cos x - \sin x + 1) dx</math> v. <math>\int_0^{\pi/4} (2 \cos x + \sin x)/(\cos x - \sin x + 1) dx</math>  vi. <math>\int_0^{\pi/2} \sin x/(\sin x - \cos x) dx</math> vii. <math>\int_0^{\pi/4} \cos x + 2 \sin x/(1 + \sin x) dx</math>  viii. <math>\int_0^{\pi/2} (a \sin x + b \cos x)/(\cos x + \sin x) dx</math> ix. <math>\int_0^{\pi/2} \cos x/(\cos x + \sin x) dx</math>  x. <math>\int_0^{\pi/2} (\sin x - 2 \cos x)/(3 \cos x + 4 \sin x + 5) dx</math> xi. <math>\int_0^{\pi/4} (\cos 2x - \sin 2x)/(3 \cos 2x + 4 \sin 2x) dx</math></p>
12.	<p><math>\int 1/(px+q)\sqrt{ax+b} dx \rightarrow \sqrt{ax+b} = t</math> ආරඳුණ භාවිතය.</p> <p>i. <math>\int 1/(2x+3) \sqrt{3x-2} dx</math> ii. <math>\int 1/x \sqrt{x-1} dx</math> iii. <math>\int 1/x \sqrt{x+1} dx</math> iv. <math>\int 1/(x-5) \sqrt{1-x} dx</math> v. <math>\int 1/(x+1) \sqrt{x} dx</math>  vi. <math>\int 1/x \sqrt{x-2} dx</math> vii. <math>\int 1/(x-4) \sqrt{2x-5} dx</math> viii. <math>\int 1/(x-99) \sqrt{x+1} dx</math> ix. <math>\int 1/(x+2) \sqrt{3x+5} dx</math>  x. <math>\int 1/(x+3) \sqrt{x-9} dx</math> xi. <math>\int_0^3 1/x \sqrt{x+1} dx</math> xii. <math>\int_1^5 1/(2x+1) \sqrt{2x-1} dx</math></p>
13.	<p><math>\int 1/(px+q)\sqrt{ax^2+bx+c} dx \rightarrow (px+q) = 1/t</math> ආරඳුණ භාවිතය.</p> <p>i. <math>\int 1/(x-1) \sqrt{x^2-2x+5} dx</math> ii. <math>\int 1/(x+1) \sqrt{x^2+4x+6} dx</math> iii. <math>\int 1/(x-2) \sqrt{x^2-8x+7} dx</math> iv. <math>\int 1/(x+1) \sqrt{8-2x-x^2} dx</math>  v. <math>\int 1/(x-2) \sqrt{9x^2-36x+35} dx</math> vi. <math>\int 1/(2x+1) \sqrt{4x^2+4x+3} dx</math> vii. <math>\int_2^3 1/x \sqrt{x^2-1} dx</math> viii. <math>\int_{1/2}^1 1/x \sqrt{4x^2-1} dx</math>  ix. <math>\int_0^{1/\sqrt{2}} 1/(1-x) \sqrt{1-x^2} dx</math> x. <math>\int 1/(x-1) \sqrt{x^2-1} dx</math> xi. <math>\int 1/(x+1) \sqrt{1-x^2} dx</math> xii. <math>\int 1/(x-3) \sqrt{x^2-9} dx</math></p>
14.	<p>හිස්ත භාග භාවිතය.</p> <p><math>1/(x-a)(x-b) \equiv A/(x-a) + B/(x-b)</math>; වන සේ A, B නියත සොයන්න. මෙහි a, b නියත දී ඇත.</p> <p><math>(px+q)/(x-a)(x-b) \equiv A/(x-a) + B/(x-b)</math>; වන සේ A, B නියත සොයන්න. මෙහි a, b, p, q නියත දී ඇත.</p> <p><math>(px^2+qx+r)/(x-a)(x-b)(x-c) \equiv A/(x-a) + B/(x-b) + C/(x-c)</math>; වන සේ A, B, C නියත සොයන්න. මෙහි a, b, c, p, q, r නියත දී ඇත.</p> <p><math>(px^2+qx+r)/(x-a)(x-b)^2 \equiv A/(x-a) + B/(x-b) + C/(x-b)^2</math>; වන සේ A, B, C නියත සොයන්න. මෙහි a, b, p, q, r නියත දී ඇත.</p> <p><math>(px^2+qx+r)/(x-a)(x^2+b^2) \equiv A/(x-a) + (Bx+C)/(x^2+b^2)</math>; වන සේ A, B, C නියත සොයන්න. මෙහි a, b, p, q, r නියත දී ඇත.</p> <p><math>1/(x^2+a^2)(x^2+b^2) \equiv (Ax+B)/(x^2+a^2) + (Cx+D)/(x^2+b^2)</math>; වන සේ A, B, C, D නියත සොයන්න. මෙහි a, b නියත දී ඇත.</p> <p>i. <math>\int (x-1)/(x+1)(x+3) dx</math> ii. <math>\int 1/(x-1)(x-2) dx</math> iii. <math>\int (x+1)/(x+2)(x+3) dx</math> iv. <math>\int x/(x^2-4) dx</math> v. <math>\int 1/(x^2-a^2) dx</math>  vi. <math>\int 1/(x^2+2x-3) dx</math> vii. <math>\int x/(x^2-2x-3) dx</math> viii. <math>\int (3x+1)/x(x^2-1) dx</math> ix. <math>\int x/(x+2)(x+3)^2 dx</math>  x. <math>\int (x+1)/(x^2+2)(x+3) dx</math> xi. <math>\int (8-x)/(x+1)(x-2)^2 dx</math> xii. <math>\int x/(x^4-a^4) dx</math> xiii. <math>\int (x^2+6)/(x^2+4)(x^2+9) dx</math>  xiv. <math>\int (3x^2+4x-2)/(x-2)(x+1)^2 dx</math> xv. <math>\int 1/(1-x^3) dx</math> xvi. <math>\int 1/(x^4-1) dx</math> xvii. <math>\int 1/(x^3-x^2-9x+9) dx</math>  xviii. <math>\int x^2/(x+2)(x-1)^2 dx</math> xix. <math>\int x/(x-3)(x^2+x+1) dx</math> xx. <math>\int (3x^2-10x-2)/(x-1)(x-2)(2x+1) dx</math>  xxi. <math>\int_0^1 x/(x+1)(x^2+4) dx</math> xxii. <math>\int_1^2 (2x+1)/x(x^2+4) dx</math> xxiii. <math>\int_2^3 (3x^2-1)/x(x^2-1) dx</math> xxiv. <math>\int_{-1}^1 x^3/(9-x^2) dx</math>  xxv. <math>\int_0^1 (x^2+12)/(x-2)(x^2-4) dx</math> xxvi. <math>\int x^3/(x+2)(x-1)^2 dx</math> xxvii. <math>\int (1+2x^3)/(1-x)(1+x)^2 dx</math>  xxviii. <math>\int x^3/(x^3-8) dx</math> xxix. <math>\int (x^2+3x+4)/(x^2-1)(x+1)^2 dx</math> xxx. <math>\int (2x^2-3)/(x-2)^2(x^2+1) dx</math></p>

15.	<p>ලියවැස්සකින් ප්‍රකාශ කරනු ලබන අනුකලනය සිටිම.</p> <p>i. <math>\int \cos^2 x \, dx</math> ii. <math>\int \sin^2 x \, dx</math> iii. <math>\int \sin^2 3x \, dx</math> iv. <math>\int \cos^2 (x/2) \, dx</math> v. <math>\int_0^{\pi/4} \tan^2 x \, dx</math> vi. <math>\int \cot^2 2x \, dx</math>  vii. <math>\int_0^{\pi/6} \sin^2 x \cos^2 x \, dx</math> viii. <math>\int_0^{\pi/2} \cos^3 x \, dx</math> ix. <math>\int_0^{\pi/3} \tan^3 x \, dx</math> x. <math>\int_0^{\pi/3} \sin^3 x \, dx</math> xi. <math>\int_0^{2\pi} \sin^4 x \, dx</math>  xii. <math>\int_0^{\pi/2} \sin^5 x \, dx</math> xiii. <math>\int_0^{\pi/3} \tan^4 x \, dx</math> xiv. <math>\int_0^{\pi/4} \tan^5 x \, dx</math> xv. <math>\int_0^{\pi/3} \tan^6 x \, dx</math> xvi. <math>\int_0^{\pi/2} \sin^7 x \, dx</math>  xvii. <math>\int_{-\pi/2}^{\pi/2} \sin 3x \cos 2x \, dx</math> xviii. <math>\int_{-\pi/2}^{\pi/2} \sin 3x \sin 5x \, dx</math> xix. <math>\int \cos 3x \cos 5x \, dx</math> xx. <math>\int \sin 5x \cos 2x \, dx</math>  xxi. <math>\int \sin 2x \cos 3x \cos 5x \, dx</math> xxii. <math>\int_{\pi/6}^{\pi/2} \sin x \sin 2x \, dx</math> xxiii. <math>\int (1 + \sin x - \cos x)^2 \, dx</math>  xxiv. <math>\int \sin 3x/(1 + \cos^2 x) \, dx</math> xxv. <math>\int \cos x \cos 2x \cos 3x \, dx</math> xxvi. <math>\int_0^{\pi} \sin 2x \cos 2x \cos 5x \, dx</math>  xxvii. <math>\int_0^{\pi/2} \cos^5 x \, dx</math> xxviii. <math>\int_{\pi/4}^{\pi/2} \sin^2 x \cos 2x \, dx</math> xxix. <math>\int_0^{\pi} \sin^3 x \cos^2 x \, dx</math>  xxx. <math>\int_0^{\pi/12} (1 - \cos^2 3x)/\cos^2 3x \, dx</math> xxxi. <math>\int_{\pi/4}^{\pi/2} \cos^4 x/\sin^8 x \, dx</math> xxxii. <math>\int_0^{\pi} \sin x \cos^4 x \, dx</math></p>
16.	<p>දී ඇති ආරද්ධය භාවිතය.</p> <p>i. <math>\int 1/x\sqrt{x^2-1} \, dx</math>; <math>[x = \sec^2 \theta]</math> ii. <math>\int \cos 2x (\sin 2x + 3)^2 \, dx</math>; <math>[u = \sin 2x + 3]</math> iii. <math>\int 1/(x+a)\sqrt{(x+b)}</math> dx; <math>[x+b=t]</math>, <math>a&gt;b</math>  iv. <math>\int x^2(x+1)/(x^2+1)^3 \, dx</math>; <math>[x = \tan \theta]</math> v. <math>\int \sec^2 x \tan^3 x \, dx</math>; <math>[u = \tan x]</math> vi. <math>\int \sec^2 \sqrt{x}/\sqrt{x} \, dx</math>; <math>[\sqrt{x}=t]</math>  vii. <math>\int e^x/(1+e^x)^2 \, dx</math>; <math>[e^x = t]</math> viii. <math>\int e^x \sqrt{1+e^x} \, dx</math>; <math>[1+e^x = t]</math> ix. <math>\int x^n (1+x^{n+1})^2 \, dx</math>; <math>[u = 1+x^{n+1}]</math>  x. <math>\int 1/(1+x)^{3/2} \, dx</math>; <math>[x = \tan^2 \theta]</math> xi. <math>\int (x^2-1)/(x^4+3x^2+1) \tan^{-1}((x^2+1)/x) \, dx</math>; <math>[x+1/x = t]</math>  xii. <math>\int \sqrt{(1+x)/(1-x)} \, dx</math>; <math>[x = \cos 2\theta]</math> xiii. <math>\int_0^{\sqrt{3}} x^3/\sqrt{x^2+1} \, dx</math>; <math>[u = x^2+1]</math> xiv. <math>\int_0^1 \sqrt{x/(1-x)} \, dx</math>; <math>[x = \sin^2 \theta]</math>  xv. <math>\int_0^2 \sqrt{x/(4-x)} \, dx</math>; <math>[\sqrt{x} = t]</math> xvi. <math>\int_2^4 \sqrt{(4-x)(x-2)} \, dx</math>; <math>[x = 3 + \sin \theta]</math> xvii. <math>\int_1^3 1/\sqrt{(x+1)(3-x)} \, dx</math>; <math>[x = 3\sin^2 \theta - \cos^2 \theta]</math>  xviii. <math>\int_0^1 (1 + \sqrt[3]{x^2} + \sqrt[6]{x})/x(1 + \sqrt[3]{x}) \, dx</math>; <math>[x = t^6]</math> xix. <math>\int_0^a \sqrt{(a+x)/(a-x)} \, dx</math>; <math>[x = a \cos 2\theta]</math>  xx. <math>\int_0^1 \sqrt{x/(2-x)} \, dx</math>; <math>[x = 2\sin^2 \theta]</math> xxii. <math>\int_0^{2a} \sqrt{(2ax-x^2)} \, dx</math>; <math>[x = 2a \sin^2 \theta]</math> xxiii. <math>\int_0^{\pi/4} \cos x \ln x \, dx</math>; <math>[u^2 = \ln x]</math>  xxiv. <math>\int_0^{\pi/3} 1/(1+3 \cot^2 x) \, dx</math>; <math>[t = \tan x]</math> xxv. <math>\int_0^{\pi/4} \sin^6 x/\cos^8 x \, dx</math>; <math>[u = \tan x]</math>  xxvi. <math>\int_0^{\pi/4} 1/(3 \cos 2x + 4 \sin 2x) \, dx</math>; <math>[t = \tan x]</math> xxvii. <math>\int (1+x)/(1 + \cos x) \, dx</math>; [Hint: <math>2 \cos^2 (x/2) = 1 + \cos x</math>]</p>
17.	<p>සුදුසු ආරද්ධය භාවිතය.</p> <p>i. <math>\int x^3/\sqrt{1-x^8} \, dx</math> ii. <math>\int_0^1 x^2/(1+x^2)^2 \, dx</math> iii. <math>\int x^2/(x^6+x^3-2) \, dx</math> iv. <math>\int [\sin(\ln x)]/x \, dx</math> v. <math>\int x(1+x)^{1/3} \, dx</math>  vi. <math>\int \tan^5 x \, dx</math> vii. <math>\int 1/(x-\sqrt{x}) \, dx</math> viii. <math>\int_0^4 (16-x^2)^{3/2} \, dx</math> ix. <math>\int_0^{\pi/4} \sin x \ln(\cos x) \, dx</math> x. <math>\int_0^{\sqrt{3}/2} x^2/\sqrt{1-x^2} \, dx</math>  xi. <math>\int_2^{2\sqrt{2}} 1/x^2\sqrt{16-x^2} \, dx</math> xii. <math>\int_0^{\pi/4} \tan^5 z \sec^2 z \, dz</math> xiii. <math>\int_1^9 (\ln x)^4/x \, dx</math> xiv. <math>\int_0^{\sqrt{5}} x^3\sqrt{x^2+4} \, dx</math>  xv. <math>\int_1^4 e^{\sqrt{x}}/\sqrt{x} \, dx</math> xvi. <math>\int_{1/2}^1 e^{1/y}/y^2 \, dy</math> xvii. <math>\int \sin^5 x \cos^6 x \, dx</math> xviii. <math>\int \cos^3 x \operatorname{cosec}^4 x \, dx</math>  xix. <math>\int_0^2 \tan^{-1} x/(1+x^2) \, dx</math> xx. <math>\int \sin^4 x \cos^5 x \, dx</math> xxi. <math>\int_0^2 x^5(1+x^3)^{-1/2} \, dx</math> xxii. <math>\int_{1/2}^1 x \ln(1/x) \, dx</math>  xxiii. <math>\int_{-1}^1 1/(1+e^{-x}) \, dx</math> xxiv. <math>\int_0^{\pi/2} \sin x/(1+\cos^2 x) \, dx</math> xxv. <math>\int_0^{\pi/4} 1/(3+4\cos^2 x + \sin^2 x) \, dx</math></p>
18.	<p>උපතන සූත්‍ර භාවිතය.</p> <p>i. <math>I_n = \int e^{ax} x^n \, dx</math> නම් <math>a I_n = e^{ax} x^n - n I_{n-1}</math>.  ii. <math>I_n = \int_0^a (a^2 - x^2)^n \, dx</math> නම් <math>(2n+1) I_n = 2na^2 I_{n-1}</math>; මෙහි <math>n &gt; 0</math> වේ.  iii. <math>I_n = \int_0^{\pi/2} x^n \sin x \, dx</math> නම් <math>I_n + n(n-1) I_{n-2} = n(n/2)^{n-1}</math>; මෙහි <math>n &gt; 1</math> වේ.  iv. <math>I_n = \int e^{-x} x^n \, dx</math> නම් <math>I_n = -e^{-x} x^n + n I_{n-1}</math>.  v. <math>I_n = \int_1^e (\ln x)^n \, dx</math> නම් <math>I_n = e - n I_{n-1}</math>; මෙහි <math>n \geq 1</math> වේ.  vi. <math>I_n = \int \tan^n x \, dx</math> නම් <math>(n-1) (I_n + I_{n-2}) = \tan^{n-1} x</math>.  vii. <math>I_n = \int (\sec x + \tan x)^n \, dx</math> නම් <math>(n-1) (I_n + I_{n-2}) = 2(\sec x + \tan x)^{n-1}</math>. මෙහි <math>n \neq 1</math> වේ.  viii. <math>I_{p,q} = \int x^p (1+x)^q \, dx</math> නම් <math>(p+1) I_{p,q} = x^{p+1} (1+x)^q - q I_{p+1,q-1}</math>.  ix. <math>I_{p,q} = \int x^p (\ln x)^q \, dx</math> නම් <math>(p+1) I_{p,q} = x^{p+1} (\ln x)^q - q I_{p,q-1}</math>.  x. <math>I_{p,q} = \int_0^1 (1-x^p)^q \, dx</math> නම් <math>(pq+1) I_{p,q} = pq I_{p,q-1}</math>. මෙහි <math>p, q &gt; 0</math> වේ.  xi. <math>I_n = \int \cos^n x \, dx</math> නම් <math>I_n = (n-1) I_{n-2} + 1/n \cos^{n-1} x \sin x</math>. මෙහි <math>n</math> යනු ධන නිඛලයකි.  xii. <math>I_n = \int x^n/\sqrt{a^2+x^2} \, dx</math> නම් <math>I_n = x^{n-1}\sqrt{a^2+x^2}/n - (n-1) a^2 I_{n-2}/n</math>; මෙහි <math>n \geq 2</math> වේ. එමෙන් <math>\int_0^2 x^5/\sqrt{5+x^2} \, dx</math> අගයන්න.</p>

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