**INTEGRALWITH TRIGONOMETRIC SUBSTITUTION**

Integran With Forms : 

|  |  |  |  |
| --- | --- | --- | --- |
| Form | Substitution | Derivative | Integran = |
|  | x = a . sin t | dx = a cos t dt | a. cos t |
|  | x = a . tan t | dx = a . sec2 t dt | a. sec t |
|  | x = a . sec t | dx = a . sec t.tan t dt | a. tan t |

Formulas :

1 – sin2 t = cos2 t

1 + tan2 t = sec2 t

sec2 t – 1 = tan2 t

Examples :

1.  Subst : x = sin t  t = arc sin x

dx = cos t dt



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= arc sin x + C

1.  Subst : x = 2 sin t  t = arc sin (x/2)

dx = 2 cos t dt





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= 2 ( t + ½ sin 2t ) + C

= 2t + sin 2t + C

= 2t + 2.sin t.cos t + C x 2

= 2 arc sin (x/2) + 2 (x/2)  

= 2 arc sin (x/2) + x . 

1.  Subst : x = 3 tan t  t = arc tan (x/3)

dx = 3 sec2 t dt x 

 3

 

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= 1n

= 1n

= 1n

= 1n

= 1n

1.   Subst : x = sec  t = arc sec (x/2)

dx = 2 sec t.tan t dt x 

 2



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= 2 

= 2 (tan t – t) + C

= 2 

COMPLEMENT TO BE PERFECT SQUARE

Examples :

1. 

=   subst : u= x + 1  du = dx

=   Subs : u = 5 tan t  du = 5 sec2 t dt

 

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= 

= 1n

= 1n

= 1n

= 1n