

ALGINT: Integration of square roots

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This package supplies no new functions, but extends the `INT` operator for indefinite integration so it can handle a wider range of expressions involving square roots. When it is loaded the controlling switch `ALGINT` is turned on. If it is desired to revert to the standard integrator, then it may be turned off. The normal integrator can deal with some square roots but in an unsystematic fashion.

```
1: load_package algint;
```

```
2: int(sqrt(sqrt(a^2+x^2)+x)/x,x);
```

```
sqrt(a)*atan((sqrt(a)*sqrt(sqrt(a2 + x2) + x)
```

```
sqrt(a2 + x2)
```

```
- sqrt(a)*sqrt(sqrt(a2 + x2) + x)*a
```

```
sqrt(a2 + x2)
```

```

- sqrt(a)*sqrt(sqrt(a  + x ) + x)*x)/(2
      2          2  2
      *a )) + 2*sqrt(sqrt(a  + x ) + x)
      2  2
+ sqrt(a)*log(sqrt(sqrt(a  + x ) + x) - sqrt(a))
      2  2
- sqrt(a)*log(sqrt(sqrt(a  + x ) + x) + sqrt(a))
3: off algint;
4: int(sqrt(sqrt(a^2+x^2)+x)/x,x);
      2  2
      sqrt(sqrt(a  + x ) + x)
int(-----,x)
      x

```

There is also a switch TRA, which may be set on to provide detailed tracing of the algorithm used. This is not recommended for casual use.