

```

> restart;
> m := 25;
  k0 := 14;

                                     m := 25
                                     k0 := 14
(1)

> E := (k) →  $\frac{k^{\frac{m}{2}}}{(k + k0)^m}$ ;

                                      $E := k \rightarrow \frac{k^{\frac{1}{2} m}}{(k + k0)^m}$ 
(2)

maximum integral range (that's related to the resolution)
> intrangemax := 200;
                                     intrangemax := 200
(3)

1D centroid:
> evalf(  $\frac{\text{Int}(k \cdot E(k), k = 0 \dots \text{intrangemax})}{\text{Int}(E(k), k = 0 \dots \text{intrangemax})}$  );
                                     17.999999401
(4)

1D centroid, discrete:
> evalf(  $\frac{\text{sum}(k \cdot E(k), k = 0 \dots \text{intrangemax})}{\text{sum}(E(k), k = 0 \dots \text{intrangemax})}$  );
                                     17.999999415
(5)

2D centroid:
> evalf(  $\frac{\text{Int}(\text{sqrt}(x \cdot x + y \cdot y) \cdot E(\text{sqrt}(x \cdot x + y \cdot y)), x = 0 \dots \text{intrangemax}, y = 0 \dots \text{intrangemax})}{\text{Int}(E(\text{sqrt}(x \cdot x + y \cdot y)), x = 0 \dots \text{intrangemax}, y = 0 \dots \text{intrangemax})}$  );
                                     19.24153004
(6)

2D centroid, discrete sum:
> evalf( (sum(sum(sqrt(x·x + y·y) · E(sqrt(x·x + y·y)), x = 0 .. intrangemax), y = 0
  .. intrangemax) ) / (sum(sum(E(sqrt(x·x + y·y)), x = 0 .. intrangemax), y = 0
  .. intrangemax) ) );
                                     21.25332001
(7)

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