```
> with(LinearAlgebra) : with(VectorCalculus) : SetCoordinates(spherical[r,
      theta, phi]) :
> F := VectorField([sin(theta)·cos(phi), sin(theta)·sin(phi), cos(theta)]) :
> n := VectorField([sin^2(theta)·cos(phi), −sin^2(theta)·sin(phi), cos(theta)
     ·sin(theta)]) :
> n_norm := sqrt(n[1]^2 + n[2]^2 + n[3]^2)
```

$$n\_norm := \sqrt{\sin(\theta)^4\cos(\phi)^2 + \sin(\theta)^4\sin(\phi)^2 + \cos(\theta)^2\sin(\theta)^2} \quad (1)$$

```
> n := simplify( n / n_norm )
```

$$n := (\cos(\phi))\bar{e}_r + (-\sin(\phi))\bar{e}_\theta + (\cot(\theta))\bar{e}_\phi \quad (2)$$

```
> dot_product := simplify(DotProduct(F, n))
```

$$dot\_product := \left(2\sin(\phi)^2\cos(\theta)^2 + 2\cos(\phi)^2 - 1\right)\csc(\theta) \quad (3)$$

```
> int( int( dot_product·sin^2(theta), theta = 0..Pi/2 ), phi = 0..Pi/2 )
```

$$\frac{\pi}{6} \quad (4)$$

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>
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