

d)

```
In[6]:= xDot[x_, y_] := (x^2 + y^2)^(Abs[n] / 2) * Cos[n * ArcTan[y / x]];
yDot[x_, y_] := (x^2 + y^2)^(Abs[n] / 2) * Sin[n * ArcTan[y / x]];
θ[x_, y_] := ArcTan[yDot[x, y] / xDot[x, y]];
integral =
  (Integrate[D[θ[1, y], y], {y, -1, 1}] + Integrate[D[θ[x, -1], x], {x, -1, 1}] +
    Integrate[D[θ[-1, y], y], {y, 1, -1}] + Integrate[D[θ[x, 1], x], {x, 1, -1}]);
index = integral / (2 * π)
```

Out[10]= n