

```

In[212]:= Clear[DCT]; Clear[IDCT];
DCT[x_] := Module[{p = x},
  n = Length[p];
  g = Table[0, {n}];
  For[f = 0, f < n, f++,
    If[f == 0,
      g[[f + 1]] = N[ $\sqrt{\frac{2}{n}} \frac{1}{\sqrt{2}} \sum_{t=0}^{n-1} p[[t + 1]] \text{Cos}\left[\frac{(2t+1)f\pi}{2n}\right]$ ],
      g[[f + 1]] = N[ $\sqrt{\frac{2}{n}} \sum_{t=0}^{n-1} p[[t + 1]] \text{Cos}\left[\frac{(2t+1)f\pi}{2n}\right]$ ]
    ];
  ]
Print[g];
]

IDCT[x_] := Module[{g = x},
  n = Length[g];
  p = Table[0, {n}];
  For[t = 0, t < n, t++,
    If[t == 0,
      p[[t + 1]] = N[ $\sqrt{\frac{2}{n}} \sum_{j=0}^{n-1} \frac{1}{\sqrt{2}} g[[j + 1]] \text{Cos}\left[\frac{(2t+1)j\pi}{2n}\right]$ ],
      p[[t + 1]] = N[ $\sqrt{\frac{2}{n}} \sum_{j=0}^{n-1} g[[j + 1]] \text{Cos}\left[\frac{(2t+1)j\pi}{2n}\right]$ ]
    ];
  ]
Print[p];
]

In[215]:= DCT[{12, 10, 8, 10, 12, 10, 8, 11}]
IDCT[{28.6, 0.6, 0.5, 1.8, 3.2, -1.8, 0.2, -0.3}];

{28.6378, 0.571202, 0.46194, 1.757, 3.18198, -1.72956, 0.191342, -0.308709}

{11.465, 14.2118, 12.149, 14.1194, 16.2048, 14.1817, 12.132, 15.1873}

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