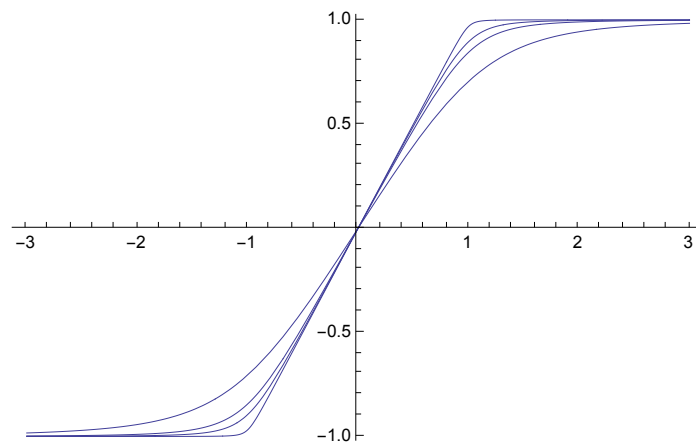


```
phi[u_] :=
  u + (1 - u) (1 / Pi ArcTan[# (u - 1)] + 1 / 2) - (u + 1) (1 / Pi ArcTan[-# (u + 1)] + 1 / 2) &
```

```
phi[u] /@ {1, 2, 3, 10}
```

$$\left\{ u + (1 - u) \left(\frac{1}{2} - \frac{\text{ArcTan}[1 - u]}{\pi} \right) - (1 + u) \left(\frac{1}{2} - \frac{\text{ArcTan}[1 + u]}{\pi} \right), \right. \\ u + (1 - u) \left(\frac{1}{2} + \frac{\text{ArcTan}[2(-1 + u)]}{\pi} \right) - (1 + u) \left(\frac{1}{2} - \frac{\text{ArcTan}[2(1 + u)]}{\pi} \right), \\ u + (1 - u) \left(\frac{1}{2} + \frac{\text{ArcTan}[3(-1 + u)]}{\pi} \right) - (1 + u) \left(\frac{1}{2} - \frac{\text{ArcTan}[3(1 + u)]}{\pi} \right), \\ \left. u + (1 - u) \left(\frac{1}{2} + \frac{\text{ArcTan}[10(-1 + u)]}{\pi} \right) - (1 + u) \left(\frac{1}{2} - \frac{\text{ArcTan}[10(1 + u)]}{\pi} \right) \right\}$$

```
saturationLisse = Show[Plot[#, {u, -3, 3}] & /@ (phi[u] /@ {1, 2, 3, 10})]
```



```
Export["saturationLisse.eps", saturationLisse]
```

```
saturationLisse.eps
```

```
Sum[i, {i, 1, 20}]
```

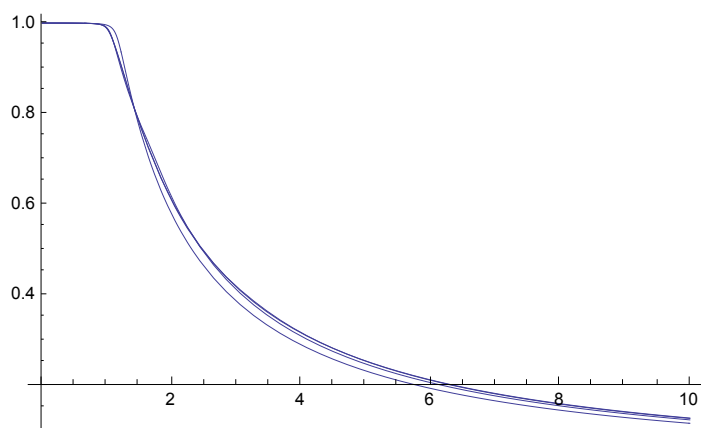
```
210
```

```
Neq[NN_, A_] := 1 / A^2 / NN
```

```
Sum[phi[A Sin[(-Pi + 2 k Pi / NN)]] [10] Sin[-Pi + 2 k Pi / NN], {k, 0, NN - 1}]
```

```
(* gamma = 10 *)
```

```
gainEquiv = Show[Plot[Neq[#, A], {A, 0, 10}] & /@ {3, 10, 20, 100}]
```



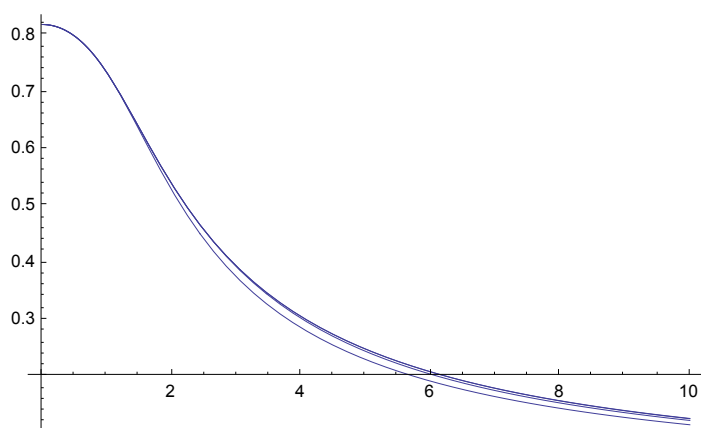
```
Export["gainEquiv.eps", gainEquiv]
```

```
gainEquiv.eps
```

```
Neq[NN_, A_] :=
```

```
1 / A 2 / NN Sum[phi[A Sin[(-Pi + 2 k Pi / NN)]] [1] Sin[-Pi + 2 k Pi / NN], {k, 0, NN - 1}]
```

```
gainEquiv2 = Show[Plot[Neq[#, A], {A, 0, 10}] & /@ {3, 10, 20, 100}]
```



```
Export["gainEquiv2.eps", gainEquiv2]
```

```
gainEquiv2.eps
```