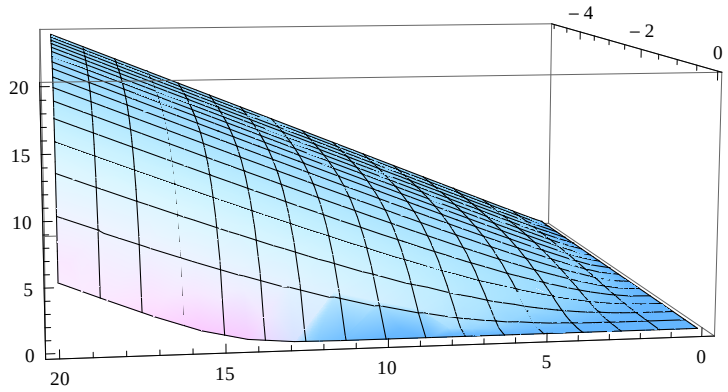
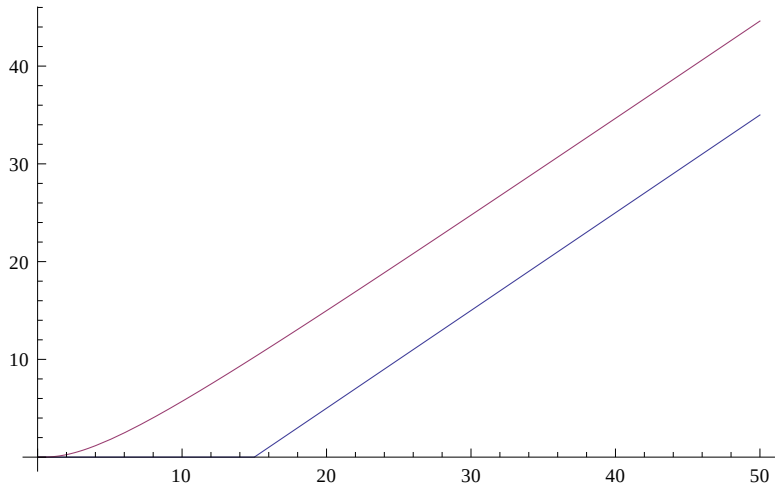
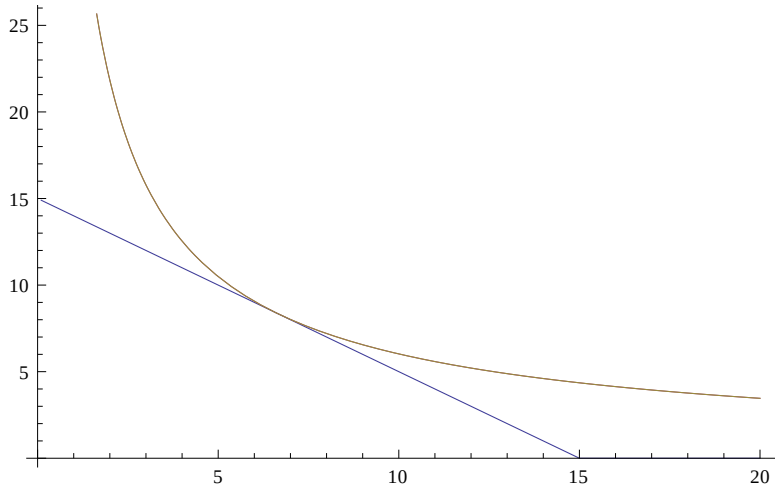
```
r = 1; sigma = 1;
p[s_] := Piecewise[{{15 - s, s < 15}, {0, s > 15 }}];
c[s_] := Piecewise[{{0, s < 15}, {s - 15, s > 15 }}]

f[s_] :=

V[S_, t_] := Exp[r * t] / Sqrt[-t * 2 * Pi] *
  NIntegrate[Exp[(Log[S / s] + (r - sigma^2 / 2) (-t))^2 / (2 sigma^2 t)] f[s] / s,
    {s, 0, Infinity}] / sigma

Plot3D[V[S, t], {S, 0, 20}, {t, -5, -0.01}]
```




```
Plot[{f[S], V[S, -1.01]}, {S, 0, 50}, PlotRange → All]
```



```
a = 0.8; ss = 15 / (1 + 1 / a);
Plot[{p[s], (15 - ss) (s / ss)^(-a), 1 / a * (15 / (1 + 1 / a))^(1 + a) * s^{-a}}, {s, 0.1, 20}]
```




```
D[1 / a * (15 / (1 + 1 / a))^(1 + a) * s^{-a}, {s, 2}] /. s → ss
```

```
{0.27}
```