In Mathematical notation:

$$C = S_t N(d_1) - Ke^{-rt} N(d_2)$$

$$\text{Where } d_1 = \frac{\ln\frac{S_t}{K} + \left(r + \frac{\sigma_v^2}{2}\right)t}{\sigma_s \sqrt{t}}$$

$$d_2 = d_1 - \sigma_s \sqrt{t}$$

$S = 40;\ B = 45\,Exp(-.033(1/3))$

$B \simeq 44.55224$

$t = 4/12 = 1/3$ (a Third of a year)

$\sigma = 40/100 = 0.4$

C = Call option price
S = Current stock
K = strike price
t = Time to maturity
N = A normal distribution

Formula $\Longrightarrow C = SN(x_1) - BN(x_2)$

$$x_1 = \frac{\log(S/B)}{\sigma\sqrt{T}} - \frac{1}{2}\sigma\sqrt{t}$$

$$= \frac{\log(40/44.55224)}{.4\sqrt{1/3}} + \frac{1}{2}(.4)\sqrt{1/3}$$

$$= -0.3512442$$

$$\cancel{x_2 = \frac{\log(S/B)}{\ }}$$

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$$x_2 = \frac{\log(S/B)}{\sigma\sqrt{T}} - \frac{1}{2}\sigma\sqrt{T}$$

$$= \frac{\log(40/44.55224)}{.4\sqrt{1/3}} - \frac{1}{2}(.4)\sqrt{1/3}$$

$$x_2 = -0.5821843$$

$N(x_1) = 0.3627026$ and $N(x_2) = 0.2802213$

$$C \simeq 40 \times 0.362706 - 44.55224 \times 0.2802213$$

$$C \simeq 2.023617$$

Black-Scholes price for the European put with the same strike and maturity

By put-call parity, $S + P = B + C$

$P = B + C - S$

$\simeq 44.55224 + 2.023617 - 40$

$\simeq 6.57586$

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