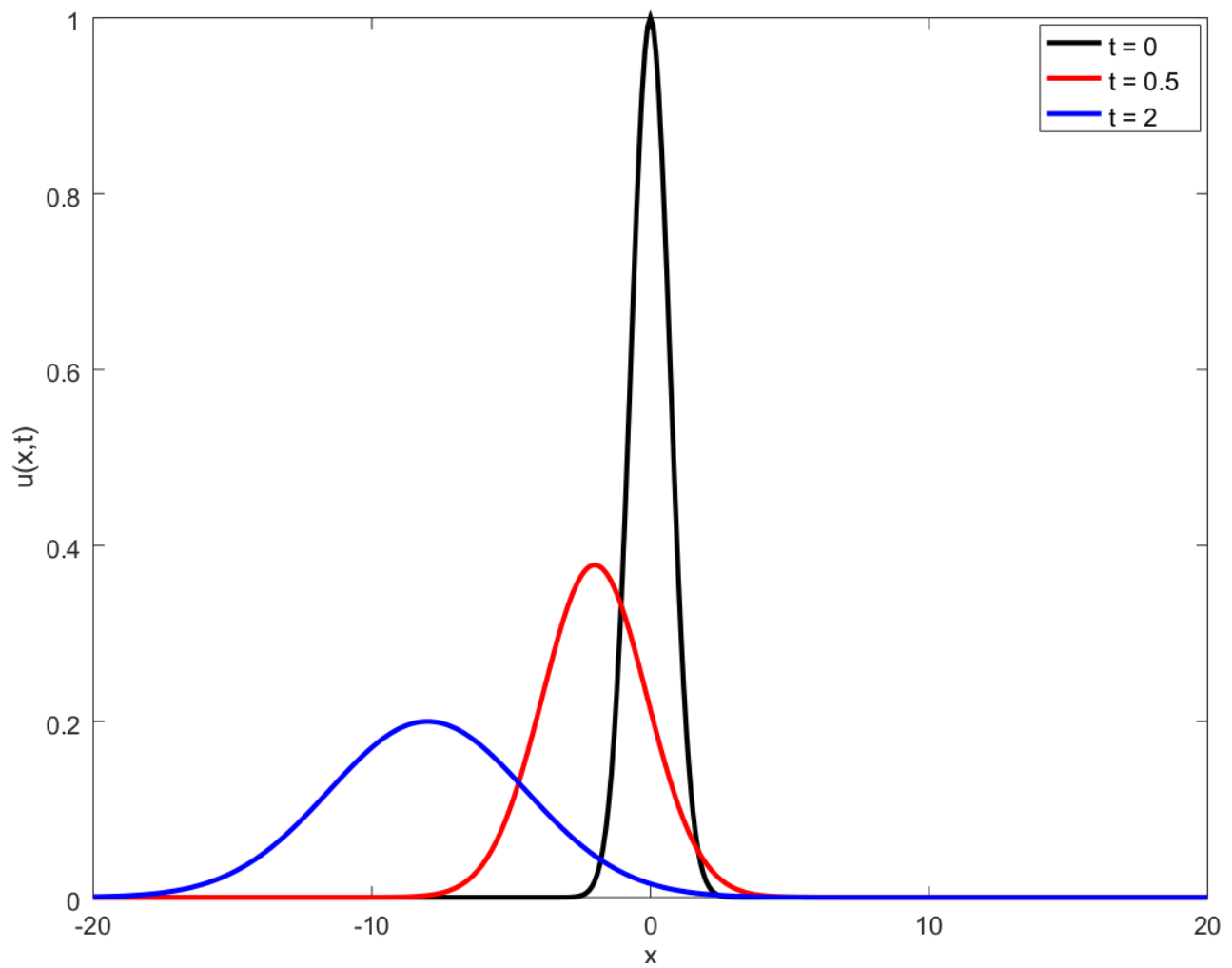


Prob 1

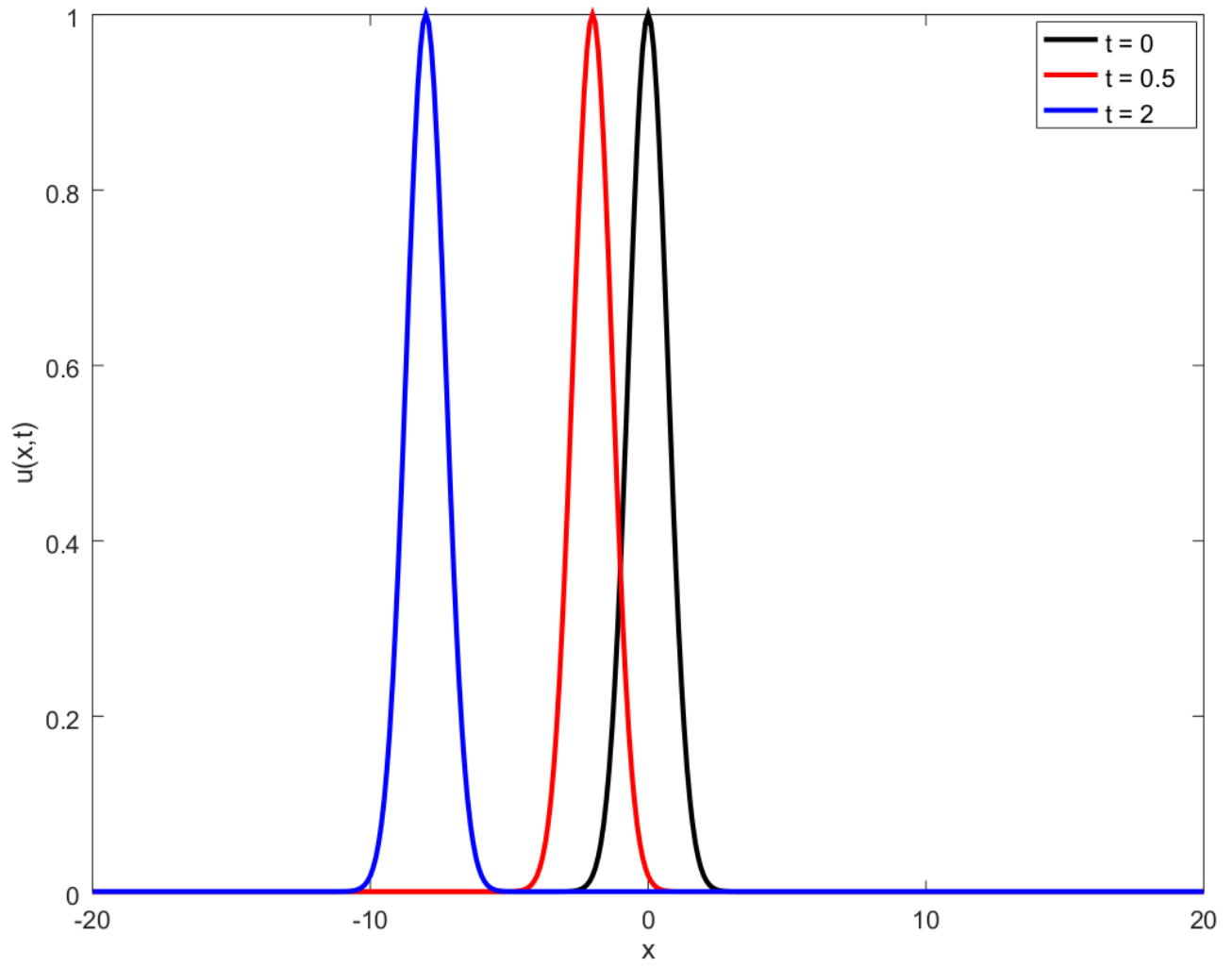
$$u(x, t) = \frac{1}{\sqrt{1+4Bt}} \exp\left[-\frac{(x+At)^2}{1+4Bt}\right]$$

Plot:

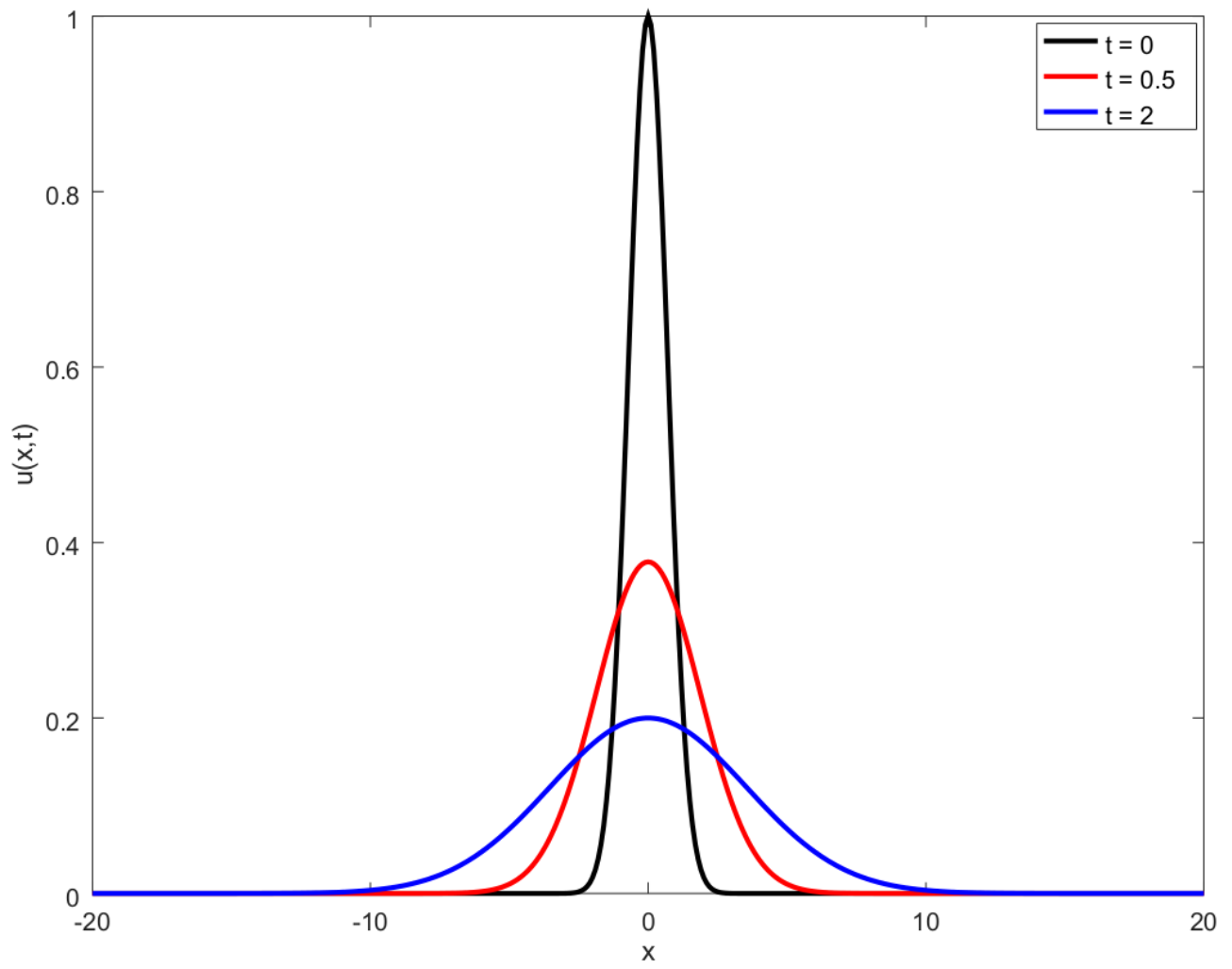
(i) $A = 4, B = 3$



(ii) $A = 4, B = 0$



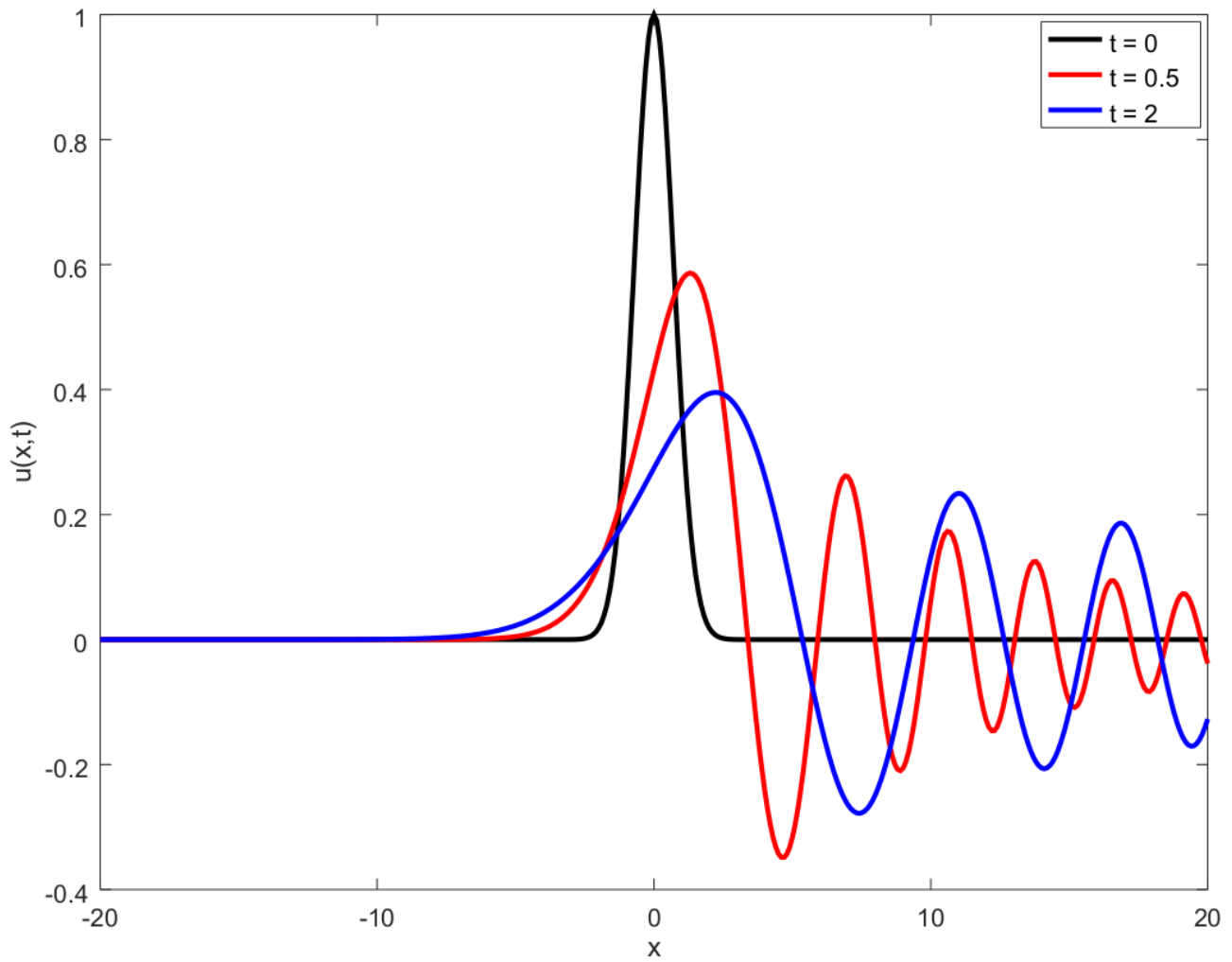
(iii) $A = 0, B = 3$



Prob 2

$$u(x, t) = \frac{1}{\sqrt{\pi}} \int_0^{\infty} e^{-\frac{\omega^2}{4}} \cos(\omega x - \omega^3 C t) d\omega$$

Plot:



Prob 3

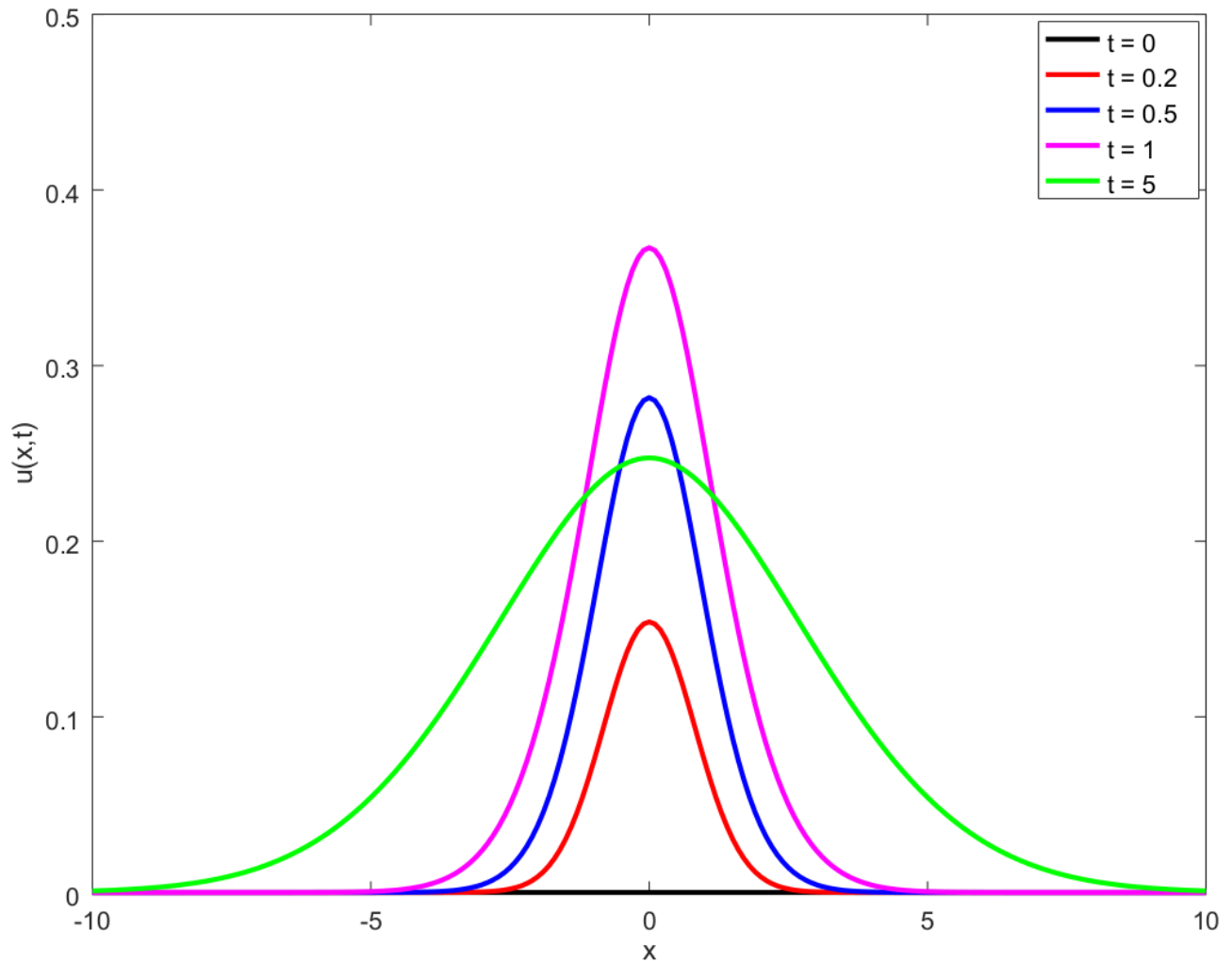
$$u(x, t) = \frac{1}{\sqrt{\pi}} \int_0^{\infty} F(\omega, t) \cos(\omega x) d\omega ,$$

where

$$F(\omega, t) = e^{-\frac{\omega^2}{4}} \left(\frac{e^{-t} - e^{-\omega^2 t}}{\omega^2 - 1} \right) , \text{ if } \omega \neq 1$$

$$= t e^{-\omega^2(\frac{1}{4} + t)} , \text{ if } \omega = 1 .$$

Plot:



Prob 4

$$u(x, t) = \sin(\pi x) \sin(2\pi y) e^{(1-8\pi^2)t} + \sin(2\pi x) \sin(\pi y) e^{(1-17\pi^2)t}$$