(6) $X(t) = 2t + 3W(t)$

$Y(t) = 2t + W(t)$

Comparing with $X(t) = \alpha t + \sigma W(t)$ we get.

α of $X(t) = 2$

σ of $X(t) = 3$

Similarly α of $Y(t) = 2$

σ of $Y(t) = 1$

~~We know~~ H

$$E[e^{-s\tau}] = e^{\frac{x}{\sigma^2}(\mu - \sqrt{2s\sigma^2 + \mu^2})}$$

$$E[\tau] = \left(-\frac{d}{ds} E[e^{-s\tau}]\right)_{s=0}$$

$$= \frac{x}{\alpha}$$

$$E[\tau^2] = \left(\frac{d^2}{ds^2} E[e^{-s\tau}]\right)_{s=0}$$

$$= \frac{x^2}{\alpha^2} + \frac{\sigma^2}{\alpha^3} x$$

$$var(\tau] = \frac{x^2}{\alpha^2} + \frac{\sigma^2 x}{\alpha^3} - \frac{x^2}{\alpha^2} = \frac{\sigma^2 x}{\alpha^3}$$

~~Bec~~ $E[\tau]_X = E[\tau]_Y = \frac{x}{2}$

$var[\tau]_X = \frac{9x}{8}$

$var(\tau)_Y = \frac{x}{8}$

Because for reaching any barrier x Expected time is same in both cases but Y offers more certainity on reaching the barrier in time close to the expected value because of less volatility. Therefore I would prefer Y.