Our normal Gravity equation is

$$\log \text{Trade}_{ij} = \text{Constant} + \beta_{\text{exp}} \log \text{GDP}_i + \beta_{\text{imp}} \log \text{GDP}_j + \beta_{\text{dist}} \log D_{ij} + \text{Controls} + \epsilon_{ij}$$

Now if we made it so distance didn't matter, $\beta_{\text{dist}} = 0$, then we should instead have

$$\log \text{Trade}'_{ij} = \text{Constant} + \beta_{\text{exp}} \log \text{GDP}_i + \beta_{\text{imp}} \log \text{GDP}_j + \mathbf{0} \times \log D_{ij} + \text{Controls} + \epsilon_{ij}$$

$$= \text{Constant} + \beta_{\text{exp}} \log \text{GDP}_i + \beta_{\text{imp}} \log \text{GDP}_j + \text{Controls} + \epsilon_{ij}$$

Which means that

$$\log \text{Trade}'_{ij} - \log \text{Trade}_{ij} =$$

$$= \left(\text{Constant} + \beta_{\text{exp}} \log \text{GDP}_i + \beta_{\text{imp}} \log \text{GDP}_j + \mathbf{0} \times \log D_{ij} + \text{Controls} + \epsilon_{ij}\right)$$
$$- \left(\text{Constant} + \beta_{\text{exp}} \log \text{GDP}_i + \beta_{\text{imp}} \log \text{GDP}_j + \beta_{\text{dist}} \log D_{ij} + \text{Controls} + \epsilon_{ij}\right)$$

$$= -\beta_{\text{dist}} \log D_{ij}$$

Note also that by the properties of logs that

$$\log \text{Trade}'_{ij} - \log \text{Trade}_{ij} = \log \frac{\text{Trade}'_{ij}}{\text{Trade}_{ij}}$$

Which means,

$$\frac{\text{Trade}'_{ij}}{\text{Trade}_{ij}} = \exp\left(\log \frac{\text{Trade}'_{ij}}{\text{Trade}_{ij}}\right) = \exp\left(\log \frac{\text{Trade}'_{ij}}{\text{Trade}_{ij}}\right) = \exp\left(-\beta_{\text{dist}} \log D_{ij}\right) = \exp\left(-\beta_{\text{dist}} \log D_{ij}\right)$$

Therefore the percent change in trade is given by the below

$$\%\text{ Change in Trade from } i \text{ to } j \equiv 100 \times \left(\frac{\text{Trade}'_{ij}}{\text{Trade}_{ij}} - 1\right) = 100 \times \left(\exp\left(-\beta_{\text{dist}} \log D_{ij}\right) - 1\right)$$

Which we can use to answer 2.v.

Note this yields the same result as setting $\log D'_{ij} = 0$, and using the formula from the notes, since there

$$\%\text{ Change in Trade from } i \text{ to } j \equiv 100 \times \left(\frac{\text{Trade}'_{ij}}{\text{Trade}_{ij}} - 1\right) = 100 \times (\exp[\beta_X (X' - X)] - 1)$$

where $\beta_X = \beta_{\text{dist}}$, $X' = \log D'_{ij} = 0$, and $X = \log D_{ij}$. (Technically speaking, setting $D_{ij} = 0$ would make trade equal infinity in the standard gravity equation, which is why we simply set $\log D_{ij} = 0$ to make the term disappear and not play a role in determining trade flows across countries).