Transpose of a Matrix

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- If $A = [a_{ij}]_{m \times n}$ then $A^T = [b_{ij}]_{n \times m}$ where $b_{ij} = a_{ji}$

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- $(A^T)^T = A$
- $(kA)^T = kA^T$
- $(AB)^T = B^T A^T$

Transpose in PyTorch

Python Code

```
import torch
A = torch.tensor([[1, -2, 3], [0, 4, 5]], dtype=torch.float)
B = torch.tensor([[4, 6, 8], [1, -3, -7]], dtype=torch.float)
print("A:")
print(A)
print("A Transposed:")
print(A.T)
print("A + B Transposed =")
print((A + B).T)
print("A^T + B^T =")
print(A.T + B.T)
print("(A^T)^T =")
print(A.T.T)
print("3 * A Transposed =")
print((3 * A).T)
print("(A @ B.T)^T =")
print((A @ B.T).T)
print("B @ A.T =")
print(B @ A.T)
```

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