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15.780 PS4

1) $s_{16} = \frac{1(-1) + -1(1) + 1(-1)}{\sqrt{(1^2 + (-1)^2 + 1^2)((-1)^2 + 1^2 + (-1)^2}} = -1$

$s_{26} = \frac{1(-1) + -1(1) + -1(-1)}{\sqrt{(1^2 + (-1)^2 + (-1)^2)((-1)^2 + 1^2 + (-1)^2}} = -1/3$

$s_{36} = \frac{-1(-1) + 1(1) + -1(-1)}{\sqrt{((-1)^2 + 1^2 + (-1)^2)((-1)^2 + 1^2 + (-1)^2)}} = 1$

$s_{46} = \frac{-1(-1) + -1(1) + 1(-1)}{\sqrt{(1^2 + (-1)^2 + 1^2)((-1)^2 + 1^2 + (-1)^2}} = -1/3$

$s_{56} = \frac{-1(-1) + 1(1) + 1(-1)}{\sqrt{((-1)^2 + 1^2 + 1^2)((-1)^2 + 1^2 + (-1)^2)}} = 1/3$

2) User 3 is most similar to user 6, which makes sense because for all the other products, user 3 rated them exactly the same as user 6 did. User 5 was the next most similar (similarity of positive 1/3), which makes sense because they only deviated from user 6's ratings by 1 item whereas the rest of the users deviated by at least 2 items.

3) $\hat{y}_{6,\text{Friday}} = \frac{0(-1) + 0(-1) + 1(1) + 0(-1) + 1/3(1)}{0 + 0 + 1 + 0 + 1/3} = 1$