1. Suppose that x securities default. Consider the following two cases:
   - x>=20. The junior tranche is worthless and the investor loses $3 million. The senior tranche is worth $100-x million. So the profit from the short position is $(77-100+x) million. The total profit is $(77-100-3+x) million. This is positive as long as x>26.
   - x<20. The junior tranche is worth $(20-x) million and it cost $3 million. So the profit from the junior tranche is $(17-x) million. The investor lost $3 million on shorting the senior tranche. The total profit is $(17-x-3) million. This is positive as long as x<14.

So the investor makes a profit as long as the number of defaults is either less than 14 or more than 26.

2. The value of the index at settlement was 3,013.61. The futures price on June 3 was 2,752.60. So the short side has to pay $250*(3013.61-2752.60)=$65,252.50.

3. The futures price on March 1 was 97.865. The settlement price was 97.8549. The short party receives $2,500*(97.865-97.8549)=$25.25.

4. (a) 1,000 barrels.
   (b) Cushing Oklahoma.
   (c) Light oil.
   (d) Sweet oil.
   (e) Any day in December 2019.

5. (a) Loss of $1.
   (b) Profit of $3.

6. $1,000*1.02=$1,020.