DSP Problem Set 4
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(1) (a) roundoff by truncation w/ saturation overflow

~~0010.0101~~ ~~≠~~   10011.0101   =>   01111.1111
~~1010.1010~~   10101.1010   11111.1111
    roundoff   roundoff   overflow
                overflow

roundoff by rounding w/ two's complement overflow

~~0010.0101~~ ~~≠~~   10011.0101   =>   10011.0101
~~1010.1011~~   10101.1011   10101.1011
           round

(b) truncation / saturation

~~0011.010~~ ~~≠~~   0011.010   =>   0111.111
~~1101.101~~   0101.101   1000.000

rounding / two's complement

~~0011.010~~ ~~≠~~   0011.011   =>   0011.011
~~1101.101~~   0101.101   0101.101

(2) 01011.0111
      101.011

(3) $4 + 2 + 1 + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} = \boxed{7\frac{7}{16}}$

$-4 + 1 + \frac{1}{4} + \frac{1}{8} = -3 + \frac{3}{8} = \boxed{-2\frac{5}{8}}$