2.3 & 2.4 Summary

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2.3.3 Signed Negation

- Be aware of the limit that comes from the encoding.
  - One more negative number than positive numbers.

2.3.4 Unsigned Multiplication

- Modulo 2^w. Would need 2w bits for exact result.

2.3.5 Signed Multiplication

- Same limit as unsigned multiplication.
- Same operation bit-wise.
  Eq. 2.17.

2.3.8

- Careful with C.
- Not just C.

PP 2.44 - Quiz

- (x > 0) || (x-1 < 0)

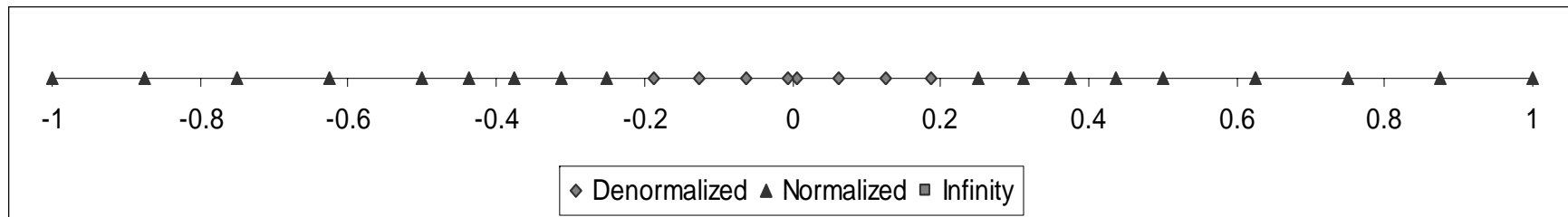- (x & 7) != 7 || ((x << 29) < 0)
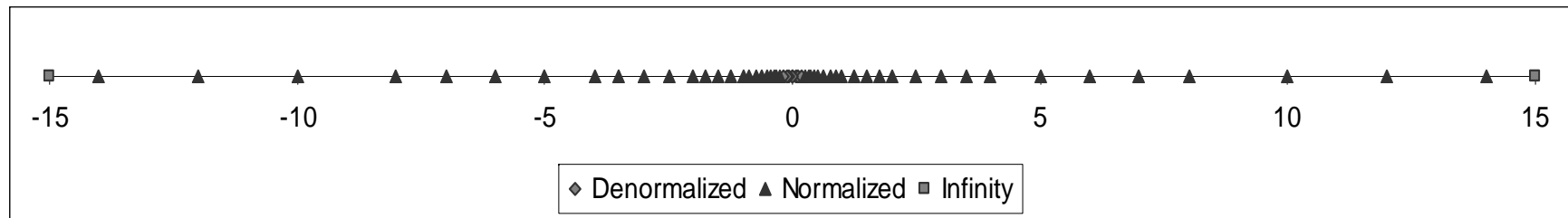
- x > 0 || (-x >= 0)

- x+y == uy+ux

PP 2.44 - Quiz

- (x > 0) || (x-1 < 0)
  No – TMin-1 overflows to TMax

- (x & 7) != 7 || ((x << 29) < 0)
  Yes – if x == 7 then (x << 29) will set the sign bit to 1.

- x > 0 || (-x >= 0)
  No - -TMin overflows to TMin.

- x+y == uy+ux
  Yes – commutative operator and same bit representation.

2.4.3 Example Numbers

- Keep Fig. 2.33 in mind: Density varies.
- Smooth transition denormalized – normalized.

2.4.6 FP in C

- What is implemented.
- What can overflow.
- What is converted without loss.

PP 2.54 - Quiz

- x==(int)(double)x

- 1.0/2==1/2.0

- d*d≥0.0

- (f+d)-f==d

PP 2.54 - Quiz

- x==(int)(double)x
  Yes – all ints are representable in double.

- 1.0/2==1/2.0
  Yes – implicit cast to float.

- d*d≥0.0
  Yes – may overflow.

- (f+d)-f==d
  No – typical loss of precision (big+small).