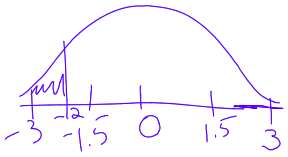
W.S.

a) $M = D + E$

$M = 2 + E$

2: depth fixed value

E: Error, $\mu = 0$, $\sigma = 1.5$



E

• Probability M is negative? ($M < 0$)

for M to be < 0 (neg.), E has to be < -2

$z = \frac{-2-0}{1.5} = -1.33$

$P(z < -1.33) = .0918$

b) 3 measurements

find prob. at least one is neg.

$P(x \geq 1) = 1 - P(x = 0) = 1 - \text{bcdf}(3, .0918, 0)$

$x = 0, 1, 2, \text{or } 3$

$= 1 - .7491$

$= .2509$

*extra practice:

Prob. exactly one of 3 are negative?

$P(x = 1) = \binom{3}{1}(.0918)^1(1-.0918)^2$

$= \text{bpdf}(3, .0918, 1)$

$= .2272$

c) mean of 3 → CLT, sampl. dist of $\bar{x}$ ($n = 3$)

$P(E < -2) = .0104$

$z = \frac{-2-0}{.866} = -2.31$

$P(z < -2.31) = .0104$

approx. normal (pop. was)

$\mu_{\bar{x}} = 0$

$\sigma_{\bar{x}} = \frac{1.5}{\sqrt{3}} = .866$