p154 Ex 8A no. 1

1. X = height of 16-19 year olds.

$X \sim N(169, 9^2)$, assumed

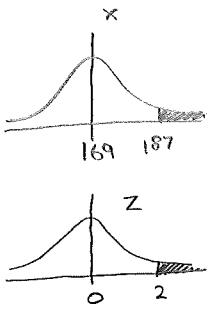
a) $P(X > 187)$

$= P\left(Z > \frac{187-169}{9}\right)$ $\quad Z \sim N(0, 1^2)$

$= P(Z > 2)$

$= 0.02275$ from normCdf(2, 9E99)

$\approx 2.3\%$



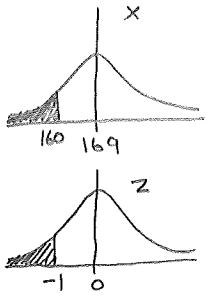
b) $P(X < 160)$

$= P\left(Z < \frac{160-169}{9}\right)$

$= P(Z < -1)$

$= 0.158655$ from normCdf(-9E99, -1)

$\approx 15.9\%$



c) $P(X < 151)$

$= P\left(Z < \frac{151-169}{9}\right)$

$= P(Z < -2)$

$= 0.02275$ by symmetry with part (a)

let Y = no. students less than 151cm in 300

$Y \sim B(300, 0.02275)$

$E(Y) = 300 \times 0.02275$

$= 6.82$

So, we expect 6 or 7 students to be smaller than 151cm.