

Math 130: Introductory Statistics
Worksheet: Normal distribution

1. Z-score probabilities:

- (a) What is $P(Z < 1.76)$?
- (b) What is $P(Z > 1.98)$?
- (c) What is $P(Z > -0.45)$?
- (d) What is $P(1.4 < Z < 1.72)$?
- (e) What is $P(0.3 < Z < 2.3)$?
- (f) What is $P(-1 < Z < 1)$?
- (g) What is $P(-2 < Z < 2)$?
- (h) What is $P(-0.75 < Z < 1.23)$?

2. Find the Z-score such that the area given is in the right hand tail (the exact values in the problems below may not appear in the Z table. In this case, get the z-score with the probability closest to given probability).

- (a) 0.0885
- (b) 0.1515
- (c) 0.0107
- (d) 0.05
- (e) 0.025
- (f) 0.01
- (g) 0.005

3. Finding rare events:

- (a) Suppose $s = 4$ and $\bar{x} = 7$. What value for x is associated with $z = 1.2$?
- (b) Suppose $s = 0.98$ and $\bar{x} = 98.6$. What value for x is associated with $z = 1.9$?
- (c) Suppose $s = 2.5$ and $\bar{x} = 43$. What value of x is the 90th percentile? 95th percentile?