Math 193 – Test 3: Version B

March 12, 2018 **Name:** _____

Instructor: Patricia Wrean

Total: 25 points

1. (3 points) There are 30 players on the Vancouver Whitecaps team. The top two player salaries are \$1,400,000, and \$725,000.

   What would happen to the mean, median and standard deviation of the player salaries if the highest paid player's salary was increased to \$1,800,000? Circle the correct answer.

mean:	increase	decrease	no change
median:	increase	decrease	no change
SD:	increase	decrease	no change

2. (5 points) An experiment consists of flipping a coin and then rolling a fair six-sided die.

   (a) How many possible outcomes does this experiment have?

   (b) What is the probability that the coin toss is *TAILS* and the die roll is a *5*?

   (c) What is the probability that the coin toss is *TAILS* or the die roll is a *5*?

3. (3 points) On a particular river, overflow floods occur once every 100 years on average. Calculate the probability that in the next 100 years there will be at least one flood.

4. (3 points) A recent study revealed that 80% of all fish in sold in BC is mislabelled. Suppose you are planning to buy fish 6 times next month. What is the probability that in your purchase

   (a) exactly one fish is correctly labelled?

   (b) no fish are correctly labelled?

5. (5 points) In a certain city, the time it takes in hours to repair a square of sidewalk is a continuous random variable with probability density function

$$f(x) = \begin{cases} 30(x^4 - x^5) & 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$$

(a) Find the probability that it takes exactly half an hour to repair a sidewalk square.

(b) Find the probability that it takes less than half an hour to repair a sidewalk square.

(c) On average, how long does it take to repair a sidewalk square?

6. (6 points) Suppose that vehicle speeds on the Malahat can be represented with a normal distribution and that mean is 96 km/h while the standard deviation is 16 km/h.

   (a) What percentage of vehicle speeds are over 100 km/h?

   (b) What percentage of vehicle speeds are under 100 km/h?

   (c) What speed separates the fastest 10% of all speeds from the slowest 90%?