MATH 123 – Tuesday, May 8, 2018

Before you start working homework questions, read through the notes from class. Try to think through anything that isn't clear to see if you can make sense of it. If something still doesn't make sense talk about it with some friends and/or come and see me. Repeat as often as necessary until you are no longer confused.

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1. Read sections 1.1 and 1.2 in the text. The above also applies to reading the textbook.

2. Evaluate each of the following sums using techniques and/or formulas demonstrated in class:

a) $1+2+3+\cdots+250$

b) $200+201+202+\cdots+500$

c) $5+10+15+\cdots+3335$

d) $1^2+2^2+3^2+\cdots+571^2$

e) $50^2+51^2+52^2+\cdots+100^2$

f) $1^2+3^2+5^2+\cdots+959^2$

3. Use the techniques and/or formulas developed in class to prove each of the following:

a) $1+5+9+\cdots+(4n+1)=(n+1)(2n+1)$.

b) $2+5+8+\cdots+(3n+2)=\dfrac{(3n+4)(n+1)}{2}$

4. Consider a pyramid with a square base and four triangular sides.

a) Determine the number of faces, edges and vertices of the pyramid.

b) Determine the number of faces, edges and vertices of the truncated pyramid.

c) Determine the number of faces, edges and vertices of the truncated,

truncated pyramid.

5. Textbook, pages 11-14 # 3, 5, 7, 9, 11, 13, 15

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Assignment # 1

Due: Thursday, May 10th 11:59a.m. (Assignments submitted after this deadline will be considered to be dead).

Instructions: Solve each of the following problems and write up you solutions in a professional manner following the guidelines for submitted work.

1. Use techniques and/or formulas developed in class to evaluate the following:

a) $4+11+18+\cdots+(7n+4)$ (Your answer will be a formula involving n)

b) $102+105+108+\cdots+999$

c) $1^2-2^2+3^2-4^2+5^2-6^2+\cdots+499^2-500^2$

2. In class we developed the formula

$$1^2+2^2+3^2+\cdots+n^2=\frac{n(n+1)(2n+1)}{6}.$$

a) Use a similar argument to develop a formula for $1^3+2^3+3^3+\cdots+n^3$.

b) Use your answer in part a) and the formula $1+2+3+\cdots+n=\frac{n(n+1)}{2}$ to prove the remarkable fact that

$$1^3+2^3+3^3+\cdots+n^3=(1+2+3+\cdots+n)^2$$

for all n.

3. Determine the number (and type) of faces, edges and vertices of the truncated, truncated cube.