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| Assessment 2Dusty Wilson Math 163 No work = no credit **No CAS Calculators** | **Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *... arithmetic has a very great and elevating effect, compelling the soul to reason about abstract number, and rebelling against the introduction of visible or tangible objects into the argument.* Plato circa 428 – 348 BC (Greek Philosopher) |

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| Warm-ups (1 pt each): | =\_\_\_\_\_ | =\_\_\_\_\_ | =\_\_\_\_\_ |

(1 pt) The quote by Plato (above) is from the same book as the Allegory of the Cave. According to Plato, what is it about numbers that distinguishes them from visible or tangible objects? Answer using complete English sentences.

(4 pts) Answer the following.

1. How much work is done when a stroller is pushed 20 m along a horizontal sidewalk with a constant force of 10 N at an angle of  below the horizontal?   
     
   Give your answer to one decimal place.

1. Suppose you apply a force of 20 N to the end of a 0.25-meter-long wrench attached to a bolt in a direction perpendicular to the bolt. Determine the magnitude of the torque when the force is applied at an angle of  to the wrench.  
     
   Give your answer to one decimal place.

(8 pts) Consider  and , find the following.

1. 
2. The angle between vectors . Give your answer to one decimal place.
3. 
4. 

(8 pts) Consider  and , find the following.

1. 
2. Find the area of the parallelogram that has the two adjacent sides . Give the exact answer.