TEST PREP on 12.2 thru 12.4 - Dr. Loveless

Test Prep Reminders:

- These problems come *directly* from the Dr. Loveless old exam archive. You can find solutions in that archive after class.
- Keep asking yourself, could I really do this on a test? How can I be more efficient? And how can I check my answers?

12.1-12.4 Extra Help:

- Here is my brief summary of chapter 12 facts.
- Here is my detailed review of 12.1-12.4.
- More review materials (section-by-section) can be found on my materials page: My Materials Page.
- You are not required to read all these resources, but I do want you to check them out and know they are there if you are having trouble and wanting more summaries. Also don't forget you have the eBook and the discussion board. So there are lots of resources for help, but you need to start assignments early so you know when you need them. I hope these test preps help guide you on this journey.

The problem below and the problems on the second page only require 12.2 and 12.3 concepts. The last page has 12.4 concepts (ignore for now). Try to get through 12.1-12.4 as soon as possible as these are essential skills moving forward.

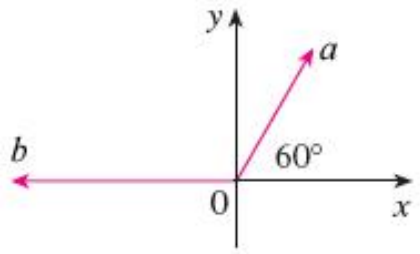
Spring 2017 - Exam 1 - Dr. Loveless (an angle problem, also a homework problem)

1(a). (3 pts) Consider the triangle with corners at A(0,0,1), B(1,1,3), and C(-1,2,4). To the nearest **degree**, find the angle at A in the triangle BAC. (That is, find $\angle BAC$).

Again, you can skip to HW questions after completing page 1. But if you want to test your understanding, here are some more old exam questions...

Fall 2013 - Exam 1 - Dr. Loveless (some trig and an angle problem, this is also a homework problem!)

1(a). (6 pts) The forces **a** and **b** are the pictured. If $|\mathbf{a}| = 80$ N and $|\mathbf{b}| = 100$ N, find the angle the **resultant** force makes with the positive x-axis.
(Give your answer rounded to the nearest degree).

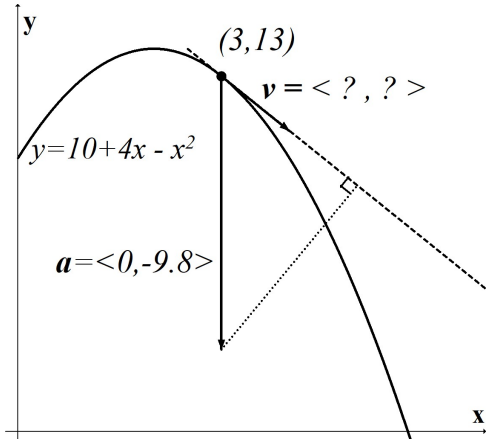


Spring 2019 - Exam 1 - Dr. Loveless (vectors with a given 2D slope plus a projection)

1(b) (6 pts) Consider the curve $y = 10 + 4x - x^2$ at $(x, y) = (3, 13)$.

(a) Find a vector, **v**, that has length 4 and is parallel to the tangent line to $y = 10 + 4x - x^2$ at $x = 3$.

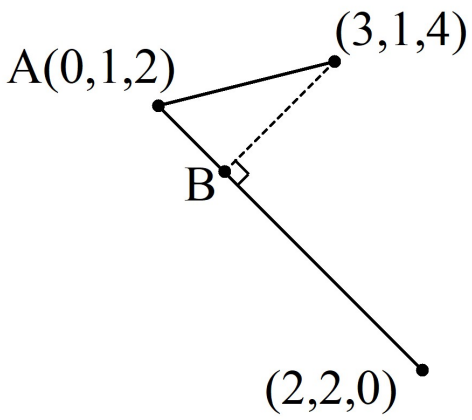
(b) Find the length of the projection of $\mathbf{a} = \langle 0, -9.8 \rangle$ onto **v**, from part (i).



Spring 2018 - Exam 1 - Dr. Loveless (part (a) involves cross-products (12.4), part (b) is about dot products (12.3)).

1(a). Find a vector that has length 7 and is orthogonal to both $\mathbf{u} = \langle 1, 0, 2 \rangle$ and $\mathbf{v} = \langle 3, -2, 1 \rangle$

1(b). Find the distance from point A to point B in the picture below (Hint: Use vector tools!)



Spring 2012 Honors - Exam 1 - Dr. Loveless (part (a) is about dot products (12.3), part (b) is about cross-product (12.4))

2. (8 pts) Consider the vectors $\mathbf{u} = \langle 3, -2, 5 \rangle$, $\mathbf{v} = \langle 2, -1, 0 \rangle$.

   (a) Find the vector obtained by projecting $\mathbf{u}$ onto $\mathbf{v}$.

   (b) Find the area of the triangle with corners $(0, 0, 0)$, $(3, -2, 5)$ and $(2, -1, 0)$.