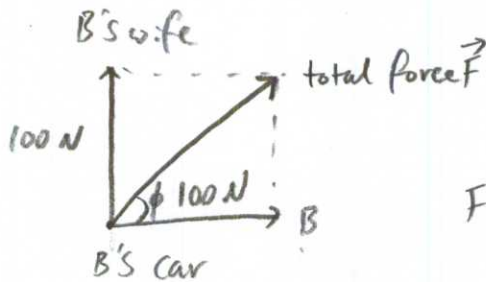


Quiz 1
MTH 13 Section E01
9 February 2017

Your name:

Instructions: Please answer the following and be sure to show your work or support your answer. You are not allowed to use the textbook, workbook, or notes. You cannot talk to other students. You can use your calculator.

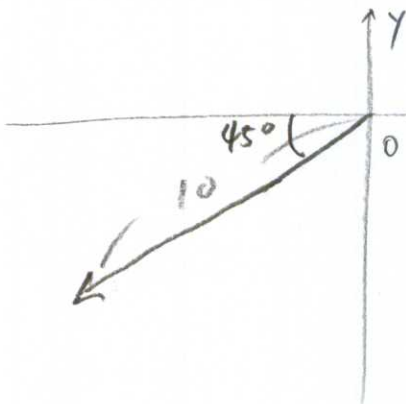
1. B's car is in mud, and B and his wife is trying to pull the car from it. B is applying 100 Newton of force horizontally, and his wife 100 Newton vertically. What is the total force applied to the car? Give your answer in "length \angle angle" form.



the angle $\phi = \tan^{-1}\left(\frac{100}{100}\right) = \frac{\pi}{4}$

$$F = \frac{100\text{N}}{\cos \frac{\pi}{4}} = \frac{100}{1/\sqrt{2}} \text{N} = \underline{\underline{100\sqrt{2} \text{N}}}$$

2. The vector \vec{A} of length 10 is in the third-quadrant. The angle between \vec{A} and the x-axis is 45° . Resolve the vector \vec{A} (i.e. write \vec{A} into the sum $A_x + A_y$).



The standard position angle of \vec{A} is $180^\circ + 45^\circ = 225^\circ$

$$A_x = 10 \cos 225^\circ = -10 \cos 45^\circ = -5\sqrt{2}$$

$$A_y = 10 \sin 225^\circ = -10 \sin 45^\circ = -5\sqrt{2}$$

If we write the length 1 vector in positive x- and y- axis direction \hat{e}_x and \hat{e}_y , respectively, then $\vec{A} = -5\sqrt{2} \hat{e}_x - 5\sqrt{2} \hat{e}_y$.