


Vectors Apps: (parallelogram method)

①



$$\cos 42^\circ = \frac{x}{60}$$


$$x = 44.5 \text{ N}$$

$$\sin 42^\circ = \frac{y}{60}$$

$$y = 40.1 \text{ N}$$

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②

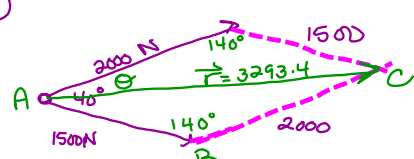


$$x = 16.1$$

$$y = 19.2$$

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③



$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$r^2 = 2000^2 + 1500^2 - 2(2000)(1500) \cos 140^\circ$$

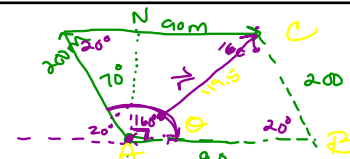
$$r = 3293.4 \text{ N}$$

$$\frac{3293.4}{\sin 140^\circ} = \frac{1500}{\sin \theta}$$

$$1500 (\sin 140^\circ) = 3293.4 \sin \theta$$

$$\theta \approx 17^\circ$$

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$$r^2 = 90^2 + 200^2 - 2(90)(200) \cos 20^\circ$$


$$r = 119.5 \text{ m}$$

$$\frac{119.5}{\sin 20^\circ} = \frac{200}{\sin \theta}$$

$$200 (\sin 20^\circ) = 119.5 (\sin \theta)$$

$$\theta = 34.9^\circ$$

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$$r^2 = 200^2 + 1000^2 - 2(200)(1000) \cos 135^\circ$$

$$r = 1150.1$$

$$\frac{1000}{\sin \theta} = \frac{1150.1}{\sin 135^\circ}$$

$$1000 (\sin 135^\circ) = 1150.1 (\sin \theta)$$

$$\theta = 38^\circ$$

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