Vector Addition problems

Show a graphical solution to adding the following vectors.

1. 12 U E and 10 U N Vr = \_\_\_\_15.6 @ 40° (39.8)
2. 15 W and 20 S Vr = 25 @ 217°



1. 16 W and 18 N Vr = 24.0 @ 132 °



1. 10 E, 4 N and 4 W Vr = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ θ \_\_\_\_\_\_

10 E and 4 W give a net of 6 E

6 E and 4 N yield Vr = 7.2 @ 34°



1. 12 E and 15 S Vr = 19.2 @ – 51 ° Quad IV



Draw the resultant vectors in the following situations and determine the magnitude (length) and the direction (angle) of the resultant you drew using trigonometry to find components.

1. 8 u E and 5.7 u at 45° vr = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ θ\_\_\_\_\_\_\_\_



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| **Vector** | X component(v)(cos θ) | Y component(v)( |
| V1 = 8 E | + 8 x | 0 |
| V2 = 5.7 @ 45° | Cos 45 )(5.7 = 4.0 x | Sin45)(5.7 = 4.0 y |
| Net x and y | 12 x | 4 y  |
| Vr (resultant | 12.6 @ 18° |  |

1. 12 u W and 15 u at 127° vr = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ θ \_\_\_\_\_\_\_\_\_



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| **Vector** | X component(v)(cos θ) | Y component(v)( |
| V1 = 12 W |  – 12 x | 0 |
| V2 = 15 @ 127 | Cos 127 (15) = – 9 x | Sin 127()15) = 12 Y |
| Net components | – 21 x | 12 Y |
| Vr (resultant) | 24.2 @ 150° |  |

1. 25 u E and 22.4 u at 117° vr = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ θ \_\_\_\_\_\_\_\_\_\_



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| **Vector** | X component(v)(cos θ) | Y component(v)( |
| V1 = 25 E | + 25 x | 0 |
| V2 = 22.4 @ 117° | Cos117)(22.4 =– 10.2 x | Sin117)(22.4) = 20.0 y  |
| Net components  | 14. 8 x | 20.0 y |
| Vr (resultant) | 24.9 @ 53.5° |  |