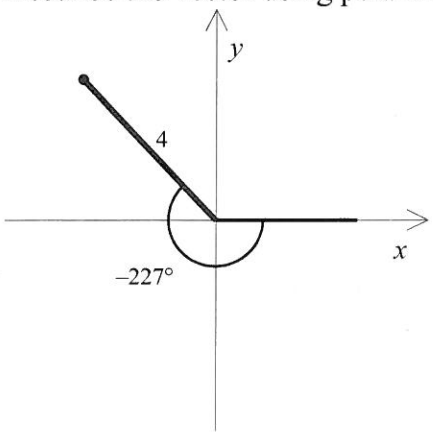
Comprehensive Review #1

Topics:
Lesson 14 - Rectangular and Polar Coordinates
Lesson 79 - Roots of Complex Numbers

1. Describe the vector using polar notation.



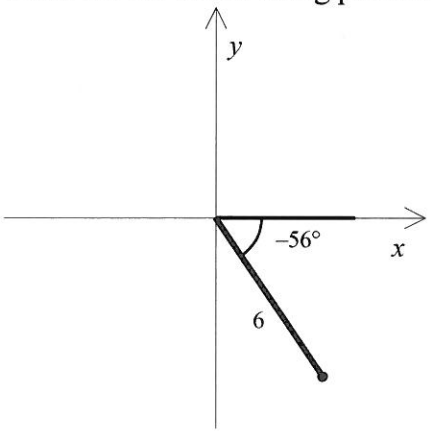
[A] $(4, -227°)$ or $4\angle -227°$

[B] $(-4, 133°)$ or $-4\angle 133°$

[C] $(4, 47°)$ or $-4\angle 47°$

[D] $(-4, 227°)$ or $4\angle 227°$

2. Describe the vector using polar notation.



[A] $(6, -56°)$ or $6\angle -56°$

[B] $(-6, 56°)$ or $6\angle 56°$

[C] $(-6, 304°)$ or $-6\angle 304°$

[D] $(6, -124°)$ or $-6\angle -124°$

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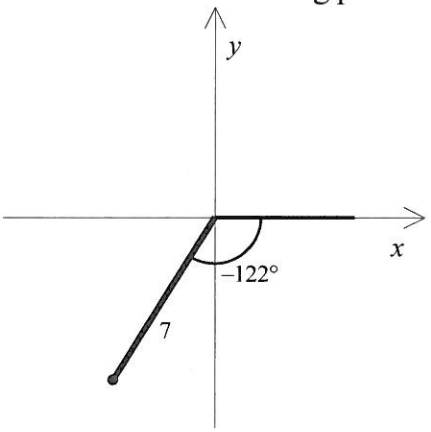
3. Describe the vector using polar notation.



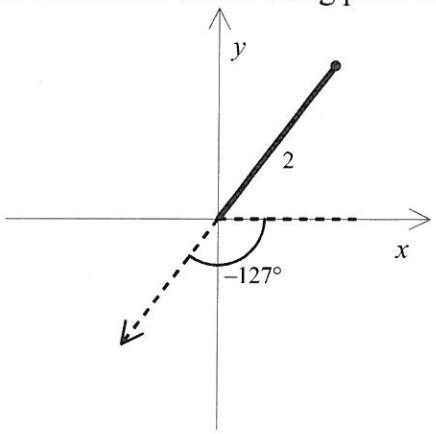
[A] $(7, 238°)$ or $7\angle 238°$

[B] $(-7, 122°)$ or $7\angle 122°$

[C] $(7, -122°)$ or $7\angle -122°$

[D] $(7, -58°)$ or $-7\angle -58°$

4. Describe the vector using polar notation.



[A] $(-2, -127°)$ or $-2\angle -127°$

[B] $(2, 127°)$ or $-2\angle 127°$

[C] $(-2, 53°)$ or $-2\angle 53°$

[D] $(-2, 307°)$ or $2\angle 307°$

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5. Convert $-2.1i + 2.8j$ to polar coordinates. (Write four forms for the point.)

[A] $3.5\angle 126.9°$, $-3.5\angle 306.9°$, $3.5\angle -306.9°$, $-3.5\angle -126.9°$

[B] $3.5\angle 53.1°$, $-3.5\angle 233.1°$, $3.5\angle -233.1°$, $-3.5\angle -53.1°$

[C] $3.5\angle 53.1°$, $-3.5\angle 233.1°$, $3.5\angle -306.9°$, $-3.5\angle -126.9°$

[D] $3.5\angle 126.9°$, $-3.5\angle 306.9°$, $3.5\angle -233.1°$, $-3.5\angle -53.1°$

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6. Convert $-2i - 4.8j$ to polar coordinates. (Write four forms for the point.)

[A] $5.2\angle 247.4°$, $-5.2\angle 67.4°$, $5.2\angle -112.6°$, $-5.2\angle -292.6°$

[B] $5.2\angle 22.6°$, $-5.2\angle 202.6°$, $5.2\angle -112.6°$, $-5.2\angle -292.6°$

[C] $5.2\angle 247.4°$, $-5.2\angle 67.4°$, $5.2\angle -337.4°$, $-5.2\angle -157.4°$

[D] $5.2\angle 22.6°$, $-5.2\angle 202.6°$, $5.2\angle -337.4°$, $-5.2\angle -157.4°$

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7. Convert $7\angle 30°$ to rectangular coordinates.

8. Convert $5\angle 300°$ to rectangular coordinates.

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9. Convert $3\angle 315°$ to rectangular coordinates.

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10. Convert $7\angle 150°$ to rectangular coordinates.

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11. Use De Moivre's theorem to find $\left(1-\sqrt{3}i\right)^3$. Write the answer in rectangular coordinates. Give an exact answer.

[A] $-28+16\sqrt{2}i$

[B] -8

[C] $-47+8\sqrt{3}i$

[D] $-2-2i$

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12. Use De Moivre's theorem to find $\left(3-\sqrt{3}i\right)^3$. Write the answer in rectangular coordinates. Give an exact answer.

[A] $-4096-4096i$

[B] $-24\sqrt{3}i$

[C] $16-42i$

[D] $837-1062\sqrt{3}i$

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13. Use De Moivre's theorem to find $(1-i)^3$. Write the answer in rectangular coordinates. Give an exact answer.

[A] $-2-2i$

[B] $-28+16\sqrt{2}i$

[C] $-47+8\sqrt{3}i$

[D] $-316-12i$

14. Find three cube roots of 64 cis 45° and express them in polar coordinates.

[A] 4 cis 15°, 21.33 cis 75°, 4 cis 255°

[B] 21.33 cis 15°, 4 cis 135°, 21.33 cis 135°

[C] 4 cis 15°, 4 cis 135°, 4 cis 255°

[D] 21.33 cis 15°, 21.33 cis 75°, 21.33 cis 135°

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15. Find three cube roots of 216 cis 150° and express them in polar coordinates.

[A] 6 cis 50°, 6 cis 170°, 6 cis 290°

[B] 6 cis 50°, 72 cis 110°, 6 cis 290°

[C] 72 cis 50°, 6 cis 170°, 72 cis 170°

[D] 72 cis 50°, 72 cis 110°, 72 cis 170°

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16. Find three cube roots of 27 cis 30° and express them in polar coordinates.

[A] 9 cis 10°, 3 cis 130°, 9 cis 130°

[B] 3 cis 10°, 9 cis 70°, 3 cis 250°

[C] 9 cis 10°, 9 cis 70°, 9 cis 130°

[D] 3 cis 10°, 3 cis 130°, 3 cis 250°